Journal of the
Indian Medical Association

Vol. XVII, No. 4 CALCUTTA January, 1948

MEMORANDUM ON THE INDIGENOUS SYSTEMS OF MEDICINE

Ayurveda and Unani

By The
INDIAN MEDICAL ASSOCIATION
TO THE GOVT. OF INDIA

The Indian Medical Association has considered the subject from the point of view that particularly appertains to all students of scientific medicine. Medicine has for its object the study of the problems relating to the preservation of health, and the prevention and cure of diseases in the human being. Besides it includes the consideration and promotion of positive health so as to prolong life and to enable the individual to enjoy life and to increase its efficiency and working capacity. Medicine is, therefore, of common interest to the whole human kind.

The science of medicine is therefore one and undivided—It is indivisible into separate water-tight compartments such as Ayurvedic, Unani, modern scientific and so forth. As there is no indigenous systems of physics, chemistry or astronomy nor an English, German or American system of them, so it stands to reason that there are not so many different systems of medicine.

The Indian Medical Association is of the opinion that these so-called systems of medicine like any other system or branch of science should be *examined and investigated* with an open mind with a view to ascertaining their usefulness in the medical relief of the country, in the light of the latest available knowledge and information of medical science and the allied branches of biological and physical science.

Ayurvedic and Unani Systems—Speaking historically, Ayurveda is the most ancient system of medicine that had its origin in the pre-historic days of the Vedas in India. It influenced and led to the growth of the Greco-Roman medicine as well as its Arabic variant the Unani Tibbi.

The Yunani System—The word Yunani or Unani comes evidently from Ionia or Greece. It derives its origin from Greco-Syrian sources. Both Greece and Rome owed a great deal of their knowledge of medicine to Buddhist preachers sent out by Chandragupta, Asoka and other Buddhist princes. The Baghdad and Basora schools of medicine contributed to the teaching of mediaeval Europe. The teaching went from there to the flourishing Tibbi of the 14th and 15th centuries in Persia and Turkey. The distinguished savant of this system is Avicenna (980-1036 A.D.) the author of Kuliat-i-Kanoon the authoritative work on the general principles of Unani medicine. It recognises and accepts 1. Elements (or Arkan), 2. Temperaments (or Mizaj), 3. Humours (or Ikhlat) 4. Faculties (or Qawa), 5. Energies or activities (or Arwah), etc., more or less on Ayurvedic lines.

Synthesis Possible—The Indian Medical Association is of the opinion that it is quite possible to synthesise and absorb, after scientific investigation, all that is of proved value in these systems into the corpus of the scientific system of medicine that is taught all over the world.

History—The word Veda is derived from the Sanskrit root 'Vid', which means 'to know', 'to judge', 'to learn', 'to gain'. It is analogous to the same Latin root 'Videre' 'to see'. Ayurveda or the study of 'Ayuh' or vital energy, longevity, the disease, their prevention and cure, is said to have been derived from the Yayurveda and the Atharva Veda. According to legends, this vidya is said to have been transmitted in the following order—

From Brahma to Daksha the Prajapati, to the two Ashwini Kumaras—the two sons of the Sun-God 'Surya', to Indra—the King of Gods, to Bharadwaja—a learned human sage, a priest physician, who is said to have been the author of the 12th hymn of the 10th book of the Atharvaveda. Bharadwaja taught Atreya. Six pupils of Atreya, namely Agnivesa, Vela, Jatukarna, Parasara, Harita, and Ksharpani wrote notes and compendia of his teachings. Of all these, only a single manuscript by Bhela and a work by Agnivesa exists. One of them 'thrice revised and recast survives in skeleton and is known as the Charaka-Samhita. It was edited by Charaka of Kashmir who left it unfinished, when he died, perhaps in the 2nd century A.D. This unfinished work was revised and completed by another Kashmir physician Drirahbala. The book so compounded is the celebrated Charaka-Samhita.

Lost Literature—Not only the works of Jatukarna, Parashara, Harita and Ksharapani but other great works called Vishwamitra-samhita, Ksharananda-samhita, Kapila-tantra, Gautama-tantra are apparently lost to us.

Alexandar the Great's invasion in 327 B.C. was followed by the depredations caused by the Scythians and the Hunas in the 6th century A.D. The Saracens under Mahmud of Gazni overran the country in the 11th century A.D. (the sack of Somnath in 1025 A.D.). Valuable literary treasures were lost during these and subsequent invasions, particularly during the burning of the great manuscript library of Prithwiraj, the last

Indian Emperor of India, by Muhmad Ghori (1192 A.D. Circ.).

The Existing Literature of Ayurveda—Charaka-Samhita has been mentioned already. The greatest name in Surgery is that of Dhanwantari of Benares. His pupils were Sushruta, Paushkalavata, Gopurarakshita, Bhoja, Bhaluki, Karavirya, Vaitarana. They have all passed into oblivion except for the fact that their names are referred to in old existing commentaries. The Sushruta Samhita is the only one of them, that survives to-day, as a revised and recompiled summary of the great original called Vriddha-Sushruta. The recompiler of Sushruta drew largely from a great work by Videha on the diseases of Eye, Ear, Nose and Throat but this as well as the large samhitas on the same subject by Nimi, Kankayana, Garga, and Galave, Chakkshushya, Satyaki, Saunaka, Karala, Krishnatreya, etc., live only in quotations.

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Vagbhata, the younger, wrote a compendium in the 7th or 8th century known as the Ashtanga Hridays Samhita, based upon the Ashtanga Samgraha of the elder Vagbhata.

The 4 great works of Ayurveda are therefore those of Charaka, Sushruta, Vagbhata and Madhava.

Thereafter no original work of Ayurveda was produced—and the history of Ayudveda lapsed into a period of stasis and stagnation.

A Period of Stasis and Stagnation—The system was taught without dissection and objective demonstration by teachers to the students. Teaching was imparted according to the *tol* system and personal apprentice system in home *pathsalas*. It is extremely important to recognise that because of this unsatisfactory method of teaching and because of inevitable time-gaps and lost continuity during the periods of stasis and stagnation, Commentators have interpreted the texts, each in his own way, according to his own ideas—and a great deal of confusion has, therefore, crept in, in their interpretation.

The Teaching of Ayurveda—The difficulty in the teaching of Ayurveda is insurmountable. Having been taught so long without any reference to anatomy, physiology and pathology of the human body, the technical terms used in the texts, thousands of years ago, have not only lost their original meaning but have received various fantastic interpretations. So much so that one authority fights with another to-day to establish his own point of view. This happens not occassionally, once or twice, but prevails in respect of essential terms used throughout the 4 or 5 ancient text books referred to above. We may refer here to the great controversy, that raged for 10 years (1922-1931) and yet was never settled, between Kj. Gangadhar Sashtri Joshi and M. M. Kj. Gananath Sen, M.A., L.M.S., about the interpretation of Kala, peshi, snayu, shira and dhamani, which was published in a pamphlet brought out by the latter entitled "Sanjaa-panchaka-bimarsha."

Kaviraj Gananath characterized the existing text of Sushruta as 'bristling with inaccuracies of ages' and in place of the old saying "shareeray sushrutah shresthah" or sushruta is the best authority in Anatomy, went so far as to say "Shareeray Sushrutah nashtah" or Sushruta is good for nothing in Anatomy. Besides Sushruta has devoted only 69 pages to the whole human Anatomy including Embryology!

The scheme recently submitted by Dr. H. N. Agashe, M.B.B.S., Sanchalak, Ayurveda Sanshodhan Mandir, Satara, to the Committee appointed by the Central Government for the upliftment of the indigenous system contains similar confession from Dr. Agashe regarding the impossibility of interpreting the old terminology. He asks with several queries, under each term, the meaning of Rasa (plasm? tissue fluid? C. S. fluid?) Meda (fat? red bone marrow?) Majja (contents of bones? brain?)

One and Only Conclusion—All this leads to but one and only conclusion possible, namely, that the 4 or 5 books of Ayurveda, as they exist to-day, can supply to us some drugs and theories for investigation and research but cannot be utilised as a system for standardised teaching, nor can it be practised as a profession. *What remains to-day* is a mass of mutilation adulterated and interpolated containing some time-honoured drugs and medicine most of which are specimens of polytherapy without reference to Chemistry and incompatibility—and a certain number of clinical aphorisms.

The point may be illustrated from *Madhava Nidana also,* the only work in Ayurveda devoted exclusively to Pathology. All kinds of fever are described together in 173 lines only or about 5 pages of 40 lines each. All heart diseases (Hridroga) are allotted a space of 15 lines only. All fractures are treated together in 25 lines:

Catholicity and High Ideology of Ayurveda—An Ayurvedic physician is required to have knowledge not only of medicine but of allied sciences or he would be condemned as a quack.

He is to keep abreast of all medical discoveries in order to render efficient succour to suffering humanity. He is enjoined to treat his patient as his own begotten child.

Ayurveda of To-day has got no scientific surgery, midwifery, gynaecology, pediatrics, juris, hygiene, pathology, bacteriology, etc. It has neither scientific anatomy, physiology, pharmacology nor physics, chemistry and biology. As a necessary corollary thereto result has been devastating upon medicine as well. She is deprived of the third eye of knowledge, namely, the measures for temperature, blood pressure, etc., the x-rays, the microscope, the stethoscope, the endoscopes, and other 'scopes' and '..meters' '..grams' and '..graphs' of later invention. The result is that for the purpose of clinical case taking a practitioner of indigenous system of medicine is not in a position to examine the various systems of the body *viz.*, the nervous, circulatory, respiratory, gastro-intestinal, urogenital, and the eye, ear, nose, throat, etc., for the interpretation of symptoms, the differential diagnosis of disease and for the management of diet and specific treatment in a scientific manner. There is hardly the description of a single disease therein that can stand scientific scrutiny and can be studied or learnt for any

utilizable purpose other than for research and comparative study.

Insanity is considered in two different categories—one is a mental disease, the other is insanity due to possession by ghosts, etc., such as Bhuta, Deva, Asura, Gandharva, Jaksha, Rakshsa, Pisacha, Ancestral spirit (Pitri graha), Reptile spirits (Naga graha).

Mantras, charms, amulets, jajnas for appeasement of planets, gods, and spirits, are widely used for treatment of diseases as well as for difficult labour. Mantras are to be cited during the preparation of medicines, so that they may be potent and effective.

Some of the diseases of infants are also ascribed to possession by evil spirits. Balagraha, Skanda graha, Rebatigraha, Putanagraha are some of them. Such superstitions are not a little responsible for the high infant mortality in India.

The Pancha Karma Chikitsa, namely, Snchan, Sweden, Vaman, Virechan and Vasti have little to contribute to modern therapeutics either in principle or technique. Indeed some of these are positively dangerous. It can be easily imagined how dangerous it is to practise catheterization without the anatomical knowledge of the parts and the technique of surgical asepsis.

Diet cannot be planned without the requisite knowledge of metabolism, bio-chemistry, the constituents of different foodstuffs, their proximate principles, vitamins and caloric equivalents. As a result, therefore, patients treated by the indigenous system suffer from excessive dietetic restrictions, protracted convalescence and a considerable loss of body weight and deterioration of general health and vitality which might have been avoided with a scientific regime of diet.

Indigenous Drugs—Already quite a large number of the drugs in the official pharmacopoeia are indigenous and more and more are being treated, added and rejected from day to day. It is scientific research and standardisation of these drugs that can eliminate false confidence, create scientific confidence, and help to popularise indigenous drugs. It is also essential that the Government must ensure the assaying and standardisation of drugs, so that they are of uniform standard and quality and hence may be utilised in schemes of medical relief and incorporated into the Indigenous Pharmacopoeia.

Question of Reform—If any branch of Ayurvedic medicine is sought to be reformed in the light of modern knowledge, apparently enough, it will become the corresponding branch of modern medicine. Therefore the process should be reversed, that is whatever in Ayurveda stands the test of scientific scrutiny, should be absorbed and synthesised into modern scientific medicine. The process, which is rational, will be easy, economical, and efficient and will prevent the reduplication of teaching same or similar subjects in parallel institutions without any uinformity of standard.

Efficiency of Medical Relief cannot be sacrificed at the altar of cheap and half-hearted measures with a promiscuous intermingling of a little-of-everything kind of medical education on grounds of emotional nationalism. We should be accused of the worst form of tinkering in view of the fact that millions of people die in this country from preventible disease alone. The *Ayurveda has no preventive medicine.*

Medical Education—As regards medical teaching, there should be only one type of medical colleges, teaching all basic, scientific, pre-clinical and clinical subjects according to the modern syllabus under the Indian Medical Council. In modern times, when medicine has become an exact science, the well-being of a country and its people is dependent on the cultivation of a scientific outlook, and it is fraught with the gravest consequences, if for emotional, national or any other consideration one should choose to discard a scientific discipline and go back to the practice of mediaeval ages.

Scientific medicine is based on all available human knowledge, past and present, indigenous and foreign and, therefore, all that is of proved scientific value in those systems may be absorbed and utilized to add to the fund of world knowledge.

No Short-cut Possible—Medical training has to be prolonged, laborious and expensive in order that it may be efficient. The production of practitioners, doctors, kavirajas and hakims with varying degrees of doubtful competence is not only inimical to the advance of scientific medicine but dangerous to the health of the people. *An apparently simple complaint* such as sore-throat, stiff-neck mild fever for a few days, slight diarrhoea with blood, anaemia and weakness, etc., may be due to causes, from most benign to most malignant, and therefore should not be treated merely for cheapness, for the consolation of some treatment that may be available ready at hand.

The efficiency of medical aid, therefore, depends necessarily upon (1) *Diagnosis*—i.e. the determination of an etio-pathological target eliminating and differentiating diseases that might cause same or similar symptoms and upon (2) *Treatment* based upon choice of drugs as indicated and made available by the progress of science all the would over. Both of these depend upon a comprehensive clinical case-taking and not infrequently upon a complicated examination by x-rays and laboratories, which involve considerable expenses. It is, therefore, the fundamental duty of the Government to provide best medical aid for all people dissolving all barriers of poverty, ignorance, etc., at whatever cost necessary for the purpose. In India, where millions die every year from preventible disease it is impossible to practise any system of medicine without adequate knowledge of the acute infectious diseases, their cause, mode of transmission, and treatment, in order to reduce death rates and adopt preventive measures against malaria, kala-azar, tuberculosis, dysenteries, pneumonia, diphtheria, septicaemias, and venereal diseases, etc.

How to utilise the existing registered practitioners of the indigenous systems of medicine:—It is quite feasible to give these practitioners the privilege of a condensed course of medicine for those who are willing and able to avail themselves of it, in mixed English and Indian languages, if necessary, so that they may be utilised as practitioners possessing minimum registrable qualification during the period of transition when there

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is a great dearth of medical men in the country. But the Indian Medical Association is positively of the opinion that all facilities for continuation of *teaching in these indigenous systems of medicine should be stopped forthwith* in the best interest of the country and its people and the students themselves.

The Need of the Hour—Science is not a provincial or even a national commodity. It belongs to humanity as a whole. So, the tendency to separation in science should be discouraged. Separate institutions for the modern scientific and the Ayurvedic and Unani systems would mean an enormous waste of men, materials, and money at a time when the country must produce 1,85,000 efficient medical men during the next 25 years to attain even half the efficiency of Public Health Administration in other civilized countries according to the Bhore Report.

Ayurveda and Unani systems have both lost all other departments of medicine except Materia Medica and Medicine. Therefore, there should be only one uniform type of medical institutions, the modern ones, teaching modern scientific subjects according to the modern syllabus. In these institutions, there may be separate Ayurvedic and Unani wards, for treating patients who are willing to be treated under these systems. The facts and figures of these wards should be followed according to modern methods of study and statistics. The case-notes, particularly those of cured cases, should be handed over to the departments of pharmacology and therapeutics for their study. This will enrich the Indian pharmacopoeia and include all that is best in these systems and will have the effect of unifying those systems into one.

Chairs and stipends should be created for encouraging research in these systems in this manner, so that whatever material of worth may be salvaged therefrom may be absorbed into the corpus of scientific medicine, and utilised by the world.

The present promiscuous method of training in Ayurvedic Unani schools, makes confusion worse confounded, and costs enormous expenses in man and money by reduplicating the very costly teaching of modern sciences in a sub-standard manner, with the result that the products of these institutions cannot be utilised for scientific medical relief in the service of the country.

Considering the poor health and high death-rate, as well as the ignorance and poverty of the Indian people, considering also the fact therefore that Medical Planning for India must be as efficient and at the same time as economical as possible, India needs must concentrate all her efforts and pool all her resources to produce the medical personnel recommended by the Bhore Committee in the minimum possible time.

India should, therefore, emulate the example of Japan, Turkey, Persia, etc., and evolve one unified system of scientific medicine. India must not for emotional or national consideration revert or retrovert to mediaevalism, by discarding scientific outlook and scientific discipline.

> "India being a poor country, can ill afford to have three systems of medicine running side by side, each having its own practitioners, hospitals and sanatoria, its laboratories and trained staff."

It is hoped that the reasons and suggestions outlined above will prove it conclusively that there is no reason why,—"the three systems cannot be combined into one all-comprehensive system," and that will give the Government the answer for the question they put to the Chopra Committee in their inaugural address.

The Indian Medical Association hopes that now, when the country has achieved its political independence and is pulsating with the hope of bettering the health and well-being of the nation as a whole, the National Government will rise equal to the burden of its duties and responsibilities to help the people and provide them with the essential requirements of life namely food, clothing, education and medical relief.

NUTRITIVE VALUE OF COMMON SALT

K. S. MHASKAR, M.A., M.D., B.SC., D.P.H., D.T.M. & H,

Honorary Secretary, The Bombay Mothers & Children Welfare Society, Bombay

Our food, inspite of the enormous variety of articles we use, consists of five constituents alone, only three of which, proteins, fats and carbohydrates are commonly considered by the lay people to have some nutritive value. The other two, mineral salts and vitamins, have not yet received adequate recognition in their scheme of life. Excepting common-salt, no person ever purchases these two as such, and even salt obtains a place in our dietary more as a condiment and for the taste it gives to the food, than for the important role it plays in regulating and controlling the life processes essential for proper nutrition.

Food Constituents

Of the 93 elements that have been discovered so far, more than 60 have been found in animal bodies and 18 of these enter into the constitution of the cell protoplasm, which is the basis of life. Whether the rest are adventiously taken in and stored away in some convenient part of the body as useless material, or whether they play any useful role in maintaining life, is yet to be explored. Copper, iodine, manganese are three of the important elements to which a definite role has now been allotted, though they are present in the body in mere traces.

While the above 18 elements take part in the activities of life as elements alone, common salt stands in a class by itself as not only both its elements, sodium and chlorine of which it is composed, have a definite duty to perform in the metabolic processes of life, but the compound common salt as such, has two other distinctive roles, one as a condiment in food and the other as a constituent of the various fluids circulating in the body.

Each of the five constituents of food-stuffs plays its particular part in nutrition, helps other constituents to perform theirs, and establishes such close relations with them as to make its own functioning impossible without others' help. Calcium salts and vitamin D given in rickets are an instance in point. The sodium element in common salt has close affinities with potassium and the chlorine element with pepsin of the gastric juice. No study of a constituent, therefore can be said to be complete unless its relations with similar members in its group and with members of other groups are satisfactorily understood. Considered in this light, the study of mineral salts as a constituent in nutrition is still in its infancy.

The following words require clear connotation:—

Salt—Indian salt, common salt, table salt, and sodium chloride.

Table salt—Salt from western countries, Rock salt: this is free from dirt or colouring matter, looks crystal white and is presentable.

Sodium chloride—This is the main constituent of every salt and is 100 per cent pure.

Mineral salt—The 93 elements in the world are either basic or acidic by nature or both. When they combine with any acidic radical as a base, the resulting substance is called a mineral salt. Sodium chloride is a mineral salt; but in common language it is called *salt* alone.

Historical

Eight varieties of salt with their medical properties have been described in Ayurvedic literature; but no deleterious effects have been noted in them, though the percentage of sodium chloride varies in them to a great extent and there is an admixture of various other mineral salts. Of these "saindhav" (Sind mine-salt) and 'samudra' (sea water salt) are the only ones accepted in daily use in the kitchen and are called common salts. The rest are prescribed by Ayurvedists when common salt cannot be used on account of some symptoms or indications and perhaps because of the high percentage of sodium chloride in the common salt. The rest are also prescribed when a definite effect of some mineral salt in them is desired: some of them have a bitter or acrid taste and some even smell of sulphides. These are great favourites with Ayurvedists for digestive troubles and diarrhœa.

'Saindhav' and 'samudra' have been used in India from times immemorial and Ayurveda would not have failed to note any of their deleterious effects, down to the period when table salt with its high percentage of sodium chloride began to be imported in India as ballast for empty ships that came to India, to carry away to foreign lands highly valued Indian goods.

Sources

Common salt is obtained in India mostly by evaporation of sea-water or of salt-spring water in open pans. Some of it is obtained from immense underground deposits as rock-salt formed by prehistoric seas; the deposits are sometimes found near the surface of the earth or have sometimes to be excavated from deep shafts a thousand or more feet below the surface. This is almost pure salt to the extent of 98 to 99 per cent. Underground brine springs have also been utilized for the preparation of common salt. Underground deposits as are found in Punjab and Sind yield almost pure salt. The salt from the brine springs as at Kharagoda (Gujarat) is also pure to a great extent, but that obtained from sea-water is considered impure because of the presence of a variety of mineral salts and insoluble matter it contains on account of the open pan method employed in its preparation. Each gallon of sea-water yields about 4 ounces of salt.

Table—Showing Salt (NaCl) Content in Milligrams, in 100 Grms. of Some Common Food-stuffs

	Salt content in milligram		*Salt content in milligram*
Cereal Foods			
Bread wheat ..	76·6	Cabbage ..	40·0
Bread Rye ..	1690·0	Carrots ..	56·0
Cornmeal ..	90·0	Cauliflower ..	60·0
Flour (white) ..	114·3	Celery ..	200·0
Oats rolled ..	110·0	Egg-plant ..	40·0
Rice	90·0	Onions	34·0
Dairy Products		Peas	40·0
Butter milk ..	160·0	Potato	60·0
Butter	2·0	Potato (Sweet) ..	160·0
Cheese (cottage)	280·0	Pumpkin ..	60·0
Eggs	180·0	Spinach ..	120·0
Milk	180·0	Turnip	70·0
Fruits		Tomato	60·0
Apple	8·0	*Fish*	
Apricot	8·0	Cod	237·0
Banana	206·0	Salmon	124·0
Cherry	20·0	*Meat*	
Figs	56·6	Bacon	2000·0
Grapes	10·0	Chicken ..	160·0
Lemon juice ..	3·0	Liver	1733·3
Peach	10·0	Meat	1700·0
Pear	20·0	*Miscellaneous*	
Pineapple ..	80·0	Molasses ..	121·0
Raisins	133·3	Honey	46·6
Strawberries ..	10·0	Cocoa	100·0
Water-melon ..	10·0	*Nuts*	
Vegetables		Almonds ..	80·0
Beans	4·0	Walnuts ..	66·6
Beat	109·0	Pea-nuts ..	100·0

Composition

The salt from the mines shows the following composition as contrasted with the unrefined quality obtained in India from open surface pans:—

	Rocksalt	*Salt from Western countries*	*Salt from India*
Insoluble—organic ..	—	0·09	0·23
Insoluble—inorganic ..	—	—	1·46
Calcium sulphate ..	1·31	0·15	1·76
Magnesium sulphate ..	—	—	2·67
Sodium sulphate ..	0·26	—	—
Magnesium chloride ..	0·10	0·03	4·29
Sodium chloride ..	98·25	99·65	87·90
Undetermined impurity ..	0·08	0·08	1·69
	1000·00	100·00	100·00

The consideration of the nutritive value of Indian salt must involve, therefore the consideration of its known constituents as pure mineral salts.

Properties

Sodium chloride stimulates the salivary secretion and promotes the action of diastatic enzymes. When the intake is minimum, the output from the kidneys nearly ceases. A large intake means a large output, as the kidneys control the concentration of the sodium electrolyte in the blood, and as much as 600 grains per day can be excreted without harm to the kidneys.

Sodium chloride is present in blood to the extent of 4·5 to 5 parts in a thousand parts of blood and helps to keep its fibrin and albumin in solution. A dilution of 9 parts of sodium chloride per thousand of plain water can sustain life and activities of living tissues for hours together and can do so much more readily, if traces of other mineral salts (calcium, potassium, magnesium) are added to it as in Ringer's physiological solution.

Sodium chloride is an important part of the water in the cell, where it is dissociated into its ions—sodium and chlorine which are charged respectively with negative and positive electricity, the cations and anions. They control the activity of the protein molecule and the processes of endosmosis and exosmosis. Sodium chloride induces assimilation of proteins.

In normal individuals a balance in the sodium chloride of the body is continually maintained; the minimum intake should not, therefore, fall below 30 grains per day to compensate for the necessary output in excretions. It prevents the toxic effects of potassium (Bunge); it controls the nutritive exchange between cells and plasma of the blood, and stimulates the excretion of waste products by the kidneys. Exclusion of sodium chloride leads to dehydration of tissues, but more of it causes œdema or retention of water in the body.

Sodium chloride increases the relish and satiety value of every food article to which it is added as a condiment. It develops the flavours of the food article on account of the osmotic action it induces and makes them stand out in relief. It produces round about it, an isotonic fluid with more rapid diffusing actions, stimulating salivation and later the secretion of gastric juice. The palatability of food is increased as also its absorption value and less of food suffices to satisfy the body's needs. The continuous sequence of the generation of digestive secretions from saliva to enterokinase in intestines is primarily due to sodium chloride acting as a condiment.

It aids digestion by the production of hydrochloric acid in the gastric juice and aids absorption of food by healthy stimulation of the mucous membrane.

It is a cell stimulant and lessens nitrogenous waste provided a sufficiency of water is supplied at the same time.

If appetite is poor and digestion feeble, solium chloride acts by virtue of its condiment properties, as a digestive stimulant. The age old practice of including salt in the dietary of men and animals proves that it is both a nutrient and a condiment. It occupies a peculiar place in our diet as it is the only mineral substance which we deliberately add to our food in fairly large quantities, in spite of its being present in food in sufficient amounts for the maintenance of health.

In addition to the chlorine it supplies for the manufacture of hydrochloric acid of gastric juice, it furnishes the acidic ions for the acid-base balance in the blood. *Sodium* regulates the neutrality of the body fluids as it comprises 93 per cent of the blood plasma base. The threshold value of sodium chloride in blood plasma is 5·62 grams per litre of blood beyond which it is removed by the kidneys.

Chlorine is found in the body in large amounts both within and without the tissues. Nearly a third of the total chlorine content is found in the skin and the tissues beneath.

Sodium chloride has no dynamic heat producing action as is shown by proteins, fats and carbohydrates; it also takes no direct part in heat production for the body.

Apart from the nutritive value of sodium chloride, it has a valuable place in our dietary as a preservative of food substances and in their seasoning. Its use in the curing of fish and the salting of butter and cheese is well known; its use as seasoning of meat preparations and of pickles is household knowledge. The use of salt enables us to partake a greater variety of earth's products as foods than could be done otherwise.

Sodium Chloride Deficiency Disorders and Diseases

The discussion of such disorders and diseases brings into greater and marked relief the virtues possessed by the substances; as such, no essay on nutrition would be complete unless it includes some reference to the disorders produced by the deficiency of the constituents of food.

Salt deficiency affects the secretion of hydrochloric acid in the gastric juice and only pepsin continues to be secreted in the absence of sodium chloride. The addition of even a little artificial hydrochloric acid activates this secretion. In hyperacidity of the stomach and threatened gastric ulcer it would, therefore, be a good plan to restrict or cut off the supply of outside sodium chloride and to select such food substances as would contain the least of it in a natural state.

Skeletal growth is retarded by diets deficient in sodium chloride. Hens produce less vigorous chicks and pregnant rabbits abort, if their is mineral hunger. The addition of salt to the diet of herbivora increases growth. Imperfect growth and deficient nutrition in man are the result of such deficiency. Salt-poor diet in cattle causes symptoms of human rickets and osteomalacia; in dogs and pigeons, weakness, trembling and paralysis occur in low salt diets.

Cows receiving no salt, exhibit abnormal appetite within three weeks; but show no ill effects till a year has elapsed. Loss of appetite, unthrifty conditions, decline in body-weight and in milk-yield then occur, and are difficult to remedy. Breakdowns occur mostly

at calving and milk secretion is decreased. The body husbands its supply of sodium chloride and reduces excretion through the kidneys. About one to two ounces of salt are adequate for milking cows. The common practice of giving them salt *ad libitum* insures adequate 'intake.'

The Utilisation of Sodium Chloride in Disease Conditions

The salt metabolism in health and disease is an important subject and possesses a definite place in the principles of nutrition.

There is a greater loss of salts in fasting than is accounted for by the metabolism of the cellular portions of the body; the loss is in the same proportion in phosphorus, calcium, and magnesium oxides as are contained in bones, the skeleton actually loses 6 to 7 per cent of weight. In pleurisy with effusion, pneumonia, in typhoid and malaria fevers, pulmonary tuberculosis, osteomalacia, delirium tremens there is a lowered calcium excretion as well.

Sodium chloride accumulates in inflammations at the seat of morbid action and disappears temporarily from the urine; its reappearance in the urine is the surest sign of patient's improvement. That is why, sodium chloride is retained in the lungs in pneumonia and in scarlet fever. This retention is not due due to failure of excretion by the kidneys.

Under healthy conditions 95 per cent of the salt is eliminated by the kidneys unchanged, within 24 hours as foreign matter and as quickly as possible. Its retention, therefore, when it occurs, is due either to inability of the kidneys, as in Bright's disease to excrete it, or to formation of chemical combinations within cells, as are seen in preliminary stages of oedema.

The normal kidney, by means of its regulatory functions, preserves a constant concentration of salts in the blood and in tissues. When this is impaired as in acute nephritis, salt is retained and concentrates in the tissues. The body holds back water to compensate for this concentration and œdema results. 75 to 90 grains of salt per day is enough for the balance. Salt-free diet is good in nephritis and hypertension. If salt is extremely reduced, it causes loss of appetite, weakness and prostration.

A salt-free diet is indicated where there is failure of compensation and diminution in the excretion of water; it is also indicated in oedema from cardiac, renal and hepatic diseases, obesity, diabetes insipidus; epilepsy, chronic parenchymatous nephritis and granular kidney with loss of compensation.

The salt-free diet is an impossibility in theory. An attempt has to be made to keep the total amount of sodium chloride between 22 to 30 grains per day which means exclusion or at least reduction of all meat and fish preparations. It is possible to live on a diet largely vegetarian provided vegetables like potatoes, rich in potassium are excluded.

Salt is an *emetic* when given internally; it also acts as a haemostatic (stopping of bleedings), decreases *secretion of mucus,* is a *vermifuge* against threadworms, promotes the absorption of pleuritic and serous exudations and of dropsies and has considerable power as an *antiperiodic* and an *antiseptic.*

The Daily Need

The human body contains about 7 pounds of mineral salts of which five-sixths are in the bones. They are important as building material for the economic construction of the body and as sources of reserve material and must, therefore, be regarded as foods. The mineral salts are indeed so necessary for maintaining the metabolic balance that death would ensue within 30 days if the supply of these salts both natural and artificial is entirely cut off. It is true that they are of no use as sources of heat and energy; but they are important as cell and tissue builders and are essential for the digestive and other functions of life.

Salt taken in as food being already soluble in water is not digested in the ordinary sense of the term; but is entirely absorbed in the small intestine and none is left over to be discarded in the fæces. The stomach and other parts of the intestinal tract take no share in its absorption. The quantity that appears in the fæces is constant (15 grains) per day; it is the residue from intestinal secretions and shows no relation to the total intake.

The human body contains about 3000 grains of sodium chloride and requires more than 150 grains per day of it in addition to 20 to 30 grains that can be obtained from foodstuffs which naturally contain it. The body excretes about 180 grains of sodium chloride per day through urine, sweat and fæces and through tears and nose secretions, when any.

Sodium chloride is an important ingredient of the urine and is necessary for the proper functioning of the kidneys and the maintenance of the specific gravity of the urine, for which at least 180 grains have to be provided for in the diet.

The Climate

The kidneys and the skin can dispose off enormous quantities of it per day without showing evidence of being overtaxed during its excretion. The quantity of sodium chloride that is consumed, therefore, varies, enormously and may be as low as 20 to 30 grains per day found naturally in the day's food-stuffs to as high as 1800 grains (4 ounces) per day in hot countries where persons perspire profusely during the hot periods of the day.

Occupation

In heavy sweating salt tolerance is increased. Miners lose as much as 84 ounces of sweat per hour containing 450 grains of sodium chloride. If large amounts of pure water are drunk to compensate for this loss of fluid, muscular cramps appear; if salt is taken with it, cramps disappear. Such hard work requires ¾ths ounces of salt per gallon of drinking water.

Sodium chloride is unevenly distributed in the living world; while there is more than a sufficiency of it in the animal world, there is comparatively very little of it in the vegetable world.

Vegetable foods contain a lot of potassium which tends to replace the sodium already present in the body or form double salts with it for the economy of life, with the result that symptoms of sodium deficiencies occur in the body. Vegetarian food-stuffs, even though they be varied, can provide only 15 to 30 grains of salt per day.

The craving for salt in vegetable feeders is, therefore, very strong and animals have been seen to travel in herds for miles together in search of salt-licks to satisfy the craving. The carnivora never require any salt, as all of it is in their prey.

The importance of salt in life is well illustrated by the proverb 'true to salt' and the gratefulness a person owes to the donor of it. The herbivora will permit any liberty for a taste of salt and one of the means of taming them is to make them addicts to salt.

Sodium chloride is, therefore, necessary to strengthen the body to maintain its internal reactions and the balance between its sodium and potassium content. The fear that it is harmful, that it strains the kidneys and injures them permanently, produces gout, diseases of skin and chronic catarrhs is, therefore, groundless both in theory and in fact.

Habits

There are no records available about the salt eating habits of Eastern nations or the dark races. In Western countries, the French are considered to be great salt eaters and the British the least. The French require 300 grains of their high percentage table salt per day per adult. The American soldiers' allowance, a meat eater by preference, is 150 grains per day.

In warm climates such as those of India, an average of 225 grains (15 grams) would be necessary to compensate for the loss that occurs through the skin. The vegetarian would, however, require another 75 grains *i.e.* a total of 300 grains of sodium chloride per adult male, per day to maintain his tissues in equilibrium.

The Bombay Government Manual for Jails, Mental Hospitals and Ordinary Hospitals allows for European Diets and in the J. J. Group of Hospitals in Bombay, half an ounce per adult per day. The Parsees are permitted an ounce of it per day. The North-Cote Police Hospital, Bombay, receives ¾ths of an ounce per day per person. In Dharwar and Ahmedabad ¾th ounce is permitted per day whether the diet is a cereal or a mutton diet. In Ratnagiri every one receives an ounce and a half per adult per day, whether he is a vegetarian or a mutton or fish-eater. The army allows ¾th ounce per day.

Habits differ. The Parsees and the Konkan people on west-coast of India, require much more salt. The minimum is half an ounce per meat-eating person, as has been arrived at theoretically.

Daily Allowance

As the Indian salt contains about 88 per cent of sodium chloride, 340 grains of it or nearly three-quarters of an ounce would be required for every vegetarian adult male per day to supply the 300 grains of pure sodium chloride required by him.

A great majority of non-vegetarians in India are vegetarian by compulsion, because meat is costly and beyond their reach. As Indians are more fond of condiments, pungent articles and salt, than any other nationality, an average of three-fourths of an ounce of Indian salt per person is, therefore, a safe allowance, as is also generally substantiated by Government practice in institutions under their charge.

The quantities for a woman may be taken as four-fifths that of man, on the analogy of calories and other foodstuffs. The quantity of the same for children below 10 years of age would be half that of the adult.

The quantity of Indian salt that would, therefore be required per year per adult male would be about 17 lbs. and per adult female 13·7 lbs.

Salt as a Mixture

Rock salt, the salts produced in Western countries and those produced in India contain certain other mineral salts which, because of their often being styled as impurities require earnest consideration, as the idea of 'impurities' is associated in our minds with something deleterious to the system.

A reasonably maximum amount of Indian salt that can be ingested per day as a necessity, is the one of 340 grains partaken by a vegetarian. This would contain :—

Insoluble, organic	0·782	grains.
Insoluble, inorganic	4·964	,,
Calcium sulphate	5·984	,,
Magnesium sulphate	9·078	,,
Sodium sulphate	nil	
Magnesium chloride	14·586	,,
Sodium chloride	298·860	,,
Undetermined impurity	5·746	,,
Total	340·000	,,

The questions that arise, therefore, are whether the sulphates of calcium, magnesium, and sodium and the chloride of magnesium are deleterious as such, in quantities mentioned above and in the highly diluted form in which they are administered as food, where the total quantity of ingested food and water often reaches a bulk of two to three pounds.

Sodium Chloride—The minimum percentage of sodium chloride in any salt has not been laid down by scientists. Salt is taken more as a condiment than as food, for its nutritive properties have not yet been appreciated or valued. It must, therefore, possess a special taste of its own in order to make it attractive as a condiment. This can only be achieved by a fairly high concentration of sodium chloride in it.

Yet, curiously enough, Indian salt with its so called impurities is preferred by many in comparison with table salt. Inspite of its maximum concentration, table salt is considered not salty enough, and a large quantity of it is required where a smaller quantity of Indian salt suffices. This is perhaps due to the very

same impurities which bring out its saline taste in relief, same as salt itself helps to bring out sweet, acid, or pungent tastes (*e.g.* of chillies) in marked relief when a pinch of it is added to fruits, butter-milk or pungent articles.

Food stuffs contain a notable quantity of mineral matter which remains as ash when the foodstuff is burnt. The mineral salts are to a considerable extent in association with the organic constituents which indicates how valuable the ash constituents are to the system. Eight elements, namely, sodium, potassium, magnesium, calcium, iron, chlorine, sulphur and phosphorus remain either wholly or in part in the ash of food stuffs. Sulphates are found particularly in certain drinking waters.

"Vegetables are rich in potassium which is ultimately eliminated in the form of the mineral salt sulphate. Potassium sulphate reacts in the blood with sodium chloride to some extent, forming sodium sulphate and potassium chloride both of which are quickly excreted by the kidneys. Hence the greater the amount of potash in food the greater the loss in sodium and chlorine from the blood and the greater is the necessity for salt to keep up the normal sodium chloride content in the body."

"It is questionable whether the intestine ever absorbs more of any mineral substance than what the tissues actually require and even if there is a tendency to accumulation of such substance in any particular situation, the fault is possibly due to some local tissue change rather than to undue increase in absorption."

Potassium chloride—This is next in importance to sodium chloride. It is found in muscular and all other tissues and fluids of the body. Potassium is required for the proper constitution of body cells, especially that of red blood cells and muscles. The acid and neutral carbonates and phosphates of sodium and potassium, regulate the reaction of the digestive secretion and of urine. Potassium is necessary for the good development of muscles.

Potassium salts are obtained mostly from vegetable world and sodium salts mostly from the animal world. Persons partaking potatoes and other vegetables rich in potassium, should necessarily take common salt as a condiment and as essential part of food. Potassium displaces sodium to a certain extent, but later forms double salts with it when excretion of common salt stops entirely.

The sodium and potassium compounds in food have to be studied together because of their differences in all activities and locations.

Potassium is present in the body mainly as phosphates, a few chlorides and bicarbonates. Sodium is mainly in the form of chlorides and bicarbonates.

Potassium consumption to the extent of 375 grains of chloride may have serious consequences as a diuretic, since there is no storage facility for it in the body; sodium can be consumed to the extent of 540—600 grains as chloride in one day and can cause no ill effects.

Calcium salts—These are important for the formation of bones and teeth as also of tissues of the body with cell-growth and development. Young growing animals require more of these than old ones.

Calcium is taken in the body in organic forms through milk, eggs, and grains and in inorganic forms as carbonates, sulphates and phosphates; both are readily absorable. On the average 15 to 22 grains of calcium are required by an adult per day to maintain equilibrium; 5 to 10 per cent is excreted in the urine and the rest is found in the fæces. This fæcal calcium comes from various organs and tissues of the body as well as from food and is excreted from the intestines. Excess of calcium taken as food is stored in bones.

Calcium excretion is associated with phosphate elimination and there is great loss of calcium and phosphorus in such diseased conditions as osteomalacia, pernicious anæmia, tuberculosis and diabetes.

Calcium excretion is lessened by therapeutic administration of phosphoric acids. Castration restores the calcium oxide and sulphur equilibrium in the system.

In myositis ossificans and in arthritis deformans there is retention of calcium salts.

The diet of families in various classes of people, both men and women, and with diets ranging in calories from 1500 to 6780 shows a wide range in the amounts of calcium, magnesium, sodium, phosphorus and iron, showing a balance of the same between the intake and output; proetin, however, large in quantity does not necessarily furnish sufficient calcium and other salts.

The literature does not mention any bad effects of any of the calcium salts. Its analogue—the barium salt, is given by mouth in large quantities, in ounces at a time, for x-ray diagnosis of the digestive tract.

Both calcium and sulphur are important substances for construction of the body, metabolism and life processes, calcium is mainly found in bones, and sulphur is an important ingredient of all protoplasm. The sulphates in food split up to yield their sulphur to the body.

In many of the diets all over the world, calcium deficiency is predominant and the Minister of Health, Great Britain, was glad to announce in Parliament that he insisted on the addition of calcium carbonate to ordinary bread in order to remove calcium deficiency among the British people.

Calcium salts whether they be carbonates or sulphates have, in medicinal doses, a constipating effect on the digestive system. These doses are several times larger than what can be found in Indian salt.

The presence of calcium sulphate in Indian salt tends to make it less hygroscopic and to keep it dry.

In the Indian salt of which an analysis is given above, the quantity of calcium sulphate would be 6 grains per day that is less than the quantity of calcium carbonate which was added to one 8-ounce loaf in Great Britain in war time.

Calcium is necessary in our routine diet. It would be better to remove this deficiency by advising a quantity of cheese or milk or the addition of chalk to bread, than regulating the quantity in Indian salt.

Magnesium salts—They are present in food in the same proportion as calcium. Bones contain 99 per

cent of calcium and 71 per cent of magnesium in the body. Magnesium is less important to the body than calcium; one-third of the intake is excreted in urine and two-thirds in fæces. Muscles contain more magnesium than calcium. Absorption of magnesium salts takes place readily from intestine.

The physiological significance of magnesium in body is still a mystery. Its salts have diuretic action in small doses upto 60 grains per day and they also exert an alkalinising effect in blood. In larger doses it exerts a laxative effect and in concentrated forms it exerts a cathartic effect. The average daily consumption of magnesium element in America is 2·7 milligrams; it is contained in wheat germs, peanuts and peas. It is present in many food-stuffs almost to the same extent and proportion as calcium.

In the Indian salt, the percentage of magnesium sulphate and magnesium chloride is 6·96. If 340 grains be accepted as the daily intake for an Indian vegetarian, 23·66 grains is the total intake of magnesium salts per day. This small quantity of magnesium salts is further diluted by the large quantity of food with which Indian salt is admixed during eating. If this quantity of magnesium salts has any effect in the body, it would at best be a diuretic one. The percentage of magnesium salts found in Indian salt is safe enough.

The diuretic and laxative effect, if any, of magnesium salts in the Indian salt, is likely to be counterbalanced by the binding effect of calcium salts present in the Indian salt.

Sulphur salts—These are present in organic combination with proteins in food-stuffs. The importance of sulphur in food is not yet properly understood.

The inorganic constituents of food are important not only from the point of view of individual ingredients but for their relations to one another as well. Sodium, potassium, calcium, and magnesium are closely related to one another in chemical properties and are not interchangeable in animal economy. In some instances, they can co-operate with the other elements; for instance, abundance of calcium renders less the amount of iron necessary to maintain iron equilibrium.

These constituents also provide the acid and base-forming elements in the diet. The base forming elements like sodium, potassium, calcium, and magnesium neutralize the acids formed in catabolism and maintain equilibrium.

The living organism is a highly unstable chemical system which tends to increase or disintegrate with any variation in average composition of the cell. Carbohydrates and fats produce enormous numbers of split products which may menace the body if there is a lack of balance in the mineral salts of the living cells. Protoplasm is an aggregate of colloids holding water, certain salts and non-electrolytes in combination.

It is, therefore, safe to surmise that sodium, potassium, calcium, magnesium, chlorine and sulphur are useful to the body whatever their source might be. They are taken in the Indian salts in such minute quantities and in food in such dilute forms and divided doses that the only possibility of their action, if any, would be as a mild diuretic.

Minerals are badly wanted by the human system and the presence of salts of other elements in the Indian salts is *a welcome nature's gift*. Because of the extreme purity and refined quality of the European table salts and rock salts, the westerners often consider it advisable to medicate them and deliberately add salts of iodine to the same.

The processes of refining in western countries had indeed gone too far and the pendulum is now swinging back to retaining the portions which used to be discarded. Polished rice and wheat flour, sugar cubes, pealed fruits and vegetable and table salt are now being justifiably replaced by unpolished rice, whole wheat flour, molasses (*gur*), unpealed fruits and vegetables, and medicated salts. Even Kruschen salts, a mixture of several mineral salts, find a regular place on some of the western breakfast tables.

The organic and inorganic insoluble matter in the Indian salt can be removed with ease by a prudent housewife; much of it is silica, sand-grains and dried fibrous vegetable matter which can never be harmful in the proportions seen in the Indian salt.

Optimum Mineral Content of Dietary in Grams per day.

Sodium chloride	..	4 to 6
Potassium oxide	..	2 to 3
Calcium oxide ..	..	1 to 1·5
Magnesium oxide	..	0·3 to 0·5
Iron ..	..	0·006 to 0·018
Phosphoric acid	..	3 to 4
Sulphuric acid ..	..	2 to 3·5
Total chlorine ..	..	6 to 8

There should also be traces of manganese, zinc, iodine, fluorine, and silica.

An outstanding feature of importance in food-stuffs is their mineral content, which however, varies remarkably in the same food-stuff in different parts of the country depending on the soil, the manure used, the water supply, the character of the seed and any blights that might visit them during their growth. Human dietary, therefore, all the world over and much more in India, falls far short of the mineral requirements needed per day. Calcium deficiency is still rampant in western countries. People in India have forgotten the proper use of salt, just the same as they are forgetting the proper use of milk. *More and more salt is the cry of coming India.*

The mineral elements in a diet exert enormous influence on the processes of metabolism and it would be impossible to maintain life if the complicate nature of its mineral requirement was not automatically adjusted and continually made good.

The food store of the whole world is now at our disposal and if it be not judiciously made use of and the metabolism of mineral nutrients be not properly understood, abuses of the same may creep in and lead to grave derangements.

Whenever a tax is imposed on salt and its use restricted the health of the people has suffered.

SUMMARY

The functions of mineral elements including those in common salt, in animal metabolism are:—

1. They mainly help to build up the osseous systems,
2. They are essential parts of every living cell in the body and control the physiological activity of protein,
3. They control the absorption of water by the colloids and thus indirectly control the absorption and secretion of every cell,
4. They control the solution, precipitation, mechanical aggregation, chemical association and ionisation of the colloids in every living tissue,
5. They regulate the movement of liquids in the tissues by their effect on osmotic pressure,
6. They act as catalysers, alter the speed of reactions and the rate of metabolism as measured by oxygen consumption,
7. They unite with injurious products of metabolism and render them harmless or useful,
8. The mineral elements, on account of the electric properties of the ions, rule the metabolic processes and control the appearance of various diseases,
9. They are the central agency for the maintenance of neutrality in the blood,
10. They govern the contraction of muscles including those of the heart,
11. They help to conduct impulses in nerve cells and are important factors in cell stimulation,
12. They assist in the co-ordination of digestive processes,
13. They activate enzymes and govern their actions through the control of chemical reactions of blood and tissue cells,
14. They control the affinity of the blood for gases and thus govern respiration.

CHRONIC PROSTATITIS

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Chronic prostatitis is often without any symptom and it may be discovered accidentally but is usually associated with vesiculitis. The prostate may be a source of persistent urethral discharge which may take on any character and may even be indistinguishable from the 'morning drop' of chronic urethritis; it is often watery and turbid but may be purulent. Many of the cases are not associated with any discharge whatsoever but the urine may show shreds in all the three glasses when tested. If however the inflammation is confined to the prostatic ducts, shreds of the 'coma' variety are seen only in the last urine.

In many cases, attention is directed to the prostate by the history and the urinary symptoms. But in others the local manifestations may be so mild that the condition is likely to be overlooked.

The present report is of 100 cases of chronic prostatitis examined in a period of one year in the Genitourinary Department of the Mayo Hospital, Lahore. The diagnosis was confirmed on the finding of more than ten pus cells in one field of high power of $^1/_6$ in the prostatic smear obtained on a slide after prostatic massage.

In general, the subjective symptoms may be divided into three groups:—(1) Predominantly urinary symptoms. (2) Symptoms resulting from chronic prostatic infection and referable—not to the prostate or the urinary tract—but to distant parts of the body. (3) Some form of sexual dysfunction.

Group 1. Patients with predominantly urinary symptoms comprise the largest number. The symptoms immediately attract attention to the urinary tract as being the source of infection. A mild urethral discharge may be the only symptom and these patients may apprehend having contracted gonorrhoea. The discharge is frequently caused by an infected prostate, spilling some of its organisms into the urethra, thus producing an inflammation there. A careful microscopic examination of the discharge is therefore, essential before a diagnosis can be arrived at. The character of the discharge is extremely variable but it is usually small in quantity and more sticky and thinner than that of gonorrhœal urethritis. In the present series of cases the discharge was present in 62 per cent. Prostatorrhoea and spermatorrhoea were formerly supposed to be associated with prostatitis; but the accuracy of this supposition is doubtful. Frequency of urination is often present and suggests a posterior urethritis. The intimate relationship of the prostate to the bladder neck leads one to expect the infected gland to produce urinary symptoms. These may be quite severe, very mild or entirely absent. There may be dysuria at the beginning, during, or at the end of urination. Pain of a varying degree may also be present in the prostate itself. It is usually mild although at times it is described as really severe. This pain may be referred to the perineum, urethra, penis, rectum or other regions of the body, and it may be aggravated by sitting on a hard chair. Relief may occasionally be obtained by crossing the knee or by pressure on the perineum.

Group 2.—There are patients who may be said to have a "silent prostate." No symptoms are referable to the urinary tract or the prostate, and yet the prostate may be the real focus of infection. Among the common lesions for which prostatic infection is responsible are arthritis, bursitis, myositis, neuritis, and iritis. When looking for the focus of infection, the prostate and seminal vesicles should be considered as carefully as the teeth, tonsils or air sinuses.

The sensory symptoms may not be of such severity as to be called 'pain' and may be described by the patients as a sensation of fullness, gnawing, constriction, burning or coldness. These have the same distribution as the pain. The symptoms may be constant or intermittent. Sometimes asymptomatic periods lasting several weeks may intervene in the course of chronic prostatitis.

Pain in the lower back is the most frequent and characteristic referred pain in this condition and may be attributed by the patient to a diseased kidney.

Young (1934) says that the distinctive feature of this pain is that it is worst when the patient rises from the bed in the morning and wears off during the course of the day, while arthritic pain becomes more.

Head (1936) has shown that the nerve fibres ending in the prostate come all the way down from the tenth dorsal to the third sacral segment. It is therefore possible for prostatic pain to be referred to any part of the body innervated by the corresponding spinal nerves which includes the entire body below the diaphragm. This pain is referred usually to the lower lumbar region, perineum, groin, testicles, penis and urethra, but may be referred to the kidney region. It may simulate renal colic, may be felt in the suprapubic region, neck of the bladder, over the sacrum, in the buttocks, hips, thighs, in the rectum, and the legs where it may simulate sciatica.

The indefinite pains may be so slight that the patient may attach little importance to them. He may attribute these to 'rheumatism or a strain' and it is surprising how long these discomforts will be endured before the patient seeks medical advice. The effect on the nervous system is, however, progressive and true neurosis may sooner or later make its appearance. The patient becomes restless, complains of a loss of concentration and may feel that he is becoming prematurely senile. His anxiety about the future and a constant feeling of ill health may provoke other symptoms: Gastrointestinal manifestations, dyspepsia or flatulence may supervene. Unfortunately, in many of these cases there is little either in the history or in the symptoms to suggest a chronic prostatic infection as the real cause of the disturbances.

In chronic prostatovesiculitis there are often no urinary symptoms. Frequency of micturition, dysuria and urgency if present are usually associated with inflammatory changes involving the vescical neck and the trigone. Frequency and difficulty in micturition and dribbling of urine suggest cicatricial contracture of the vesical orifice or the prostatic urethra. In the latter case, complete retention may eventually occur and there may be symptoms of obstructive damage to the bladder and the kidneys.

Group 3—Symptoms of sexual dysfunction are fairly common. But in view of the fact that the prostate is a sexual gland and considering the frequency of prostatic infection, it is remarkable that sexual symptoms are not more common and severe than they are. That the sexual disorders are caused or aggravated by chronic prostatitis is proved by the treatment of prostatitis resulting in considerable benefit of the symptoms. So many factors are, however, involved that it is difficult to evaluate the exact results. One should in any case investigate the prostate carefully and attempt to rid it of any infection. According to Kreschmar (1939), premature ejaculation, loss of desire and weak erections are the symptoms most commonly complained of by the patients in this group.

In considering the abnormalities of sexual function, one must take into account the great importance of psychological factors. It is undoubtedly true that in many cases of chronic prostatitis with large amounts of pus in the prostate, desire, erection, and ejaculation are entirely unaffected or even for a time increased. On the other hand, many individuals with an entirely normal prostate suffer from a great variety of sexual symptoms which can only have a psychical basis. Persons of an introspective nature may become impotent, the trouble dating from a single instance of failure due usually to (*a*) premature ejaculation following exceptional sexual excitement, (*b*) failure of erection following too prolonged excitement, (*c*) failure of erection or ejaculation or both following alcoholic intoxication, fatigue, worry or pre-occupation. In many cases, this type of impotence is cured at once by a few words of sensible advice. Where the mental state is less stable, more subtle influences may have far reaching consequence. Among them may be mentioned worry—over early masturbations, fancies, physical deficiencies or feelings of sexual inferiority, often due to association with an over-zealous partner. Lastly, the existence of a diseased condition, such as urethritis or a varicocele often leads to impotence from worry.

Definite pathological conditions in the prostate and the vesicles do of course cause sexual symptoms. In some cases the pain increases at coitus or occurs only in coitus. Inflammation sometimes increases the genital irritability so that nocturnal emissions, premature ejaculation and frequent erections are not uncommon.

The urologist should therefore, attempt to evaluate from the patient's history as to which elements of the symptoms have a basis on the local inflammation and which are purely psychogenic.

The subsequent sequence of events depends largely on the source of symptoms: As the prostatitis improves, the symptoms due to the pathological lesion will improve. Extensive reparative changes of a fibrotic nature, even with occlusion of the ejaculatory ducts, do not preclude the re-establishment of normal sexual functions. The course of psychogenic symptoms, however, depends on the severity of the psychic disorder. It may be that advice, encouragement and sympathy will effect an early cure. But if a severe psychosis is present, there is no means whatsoever of arresting its progress.

The analysis of the case records of 100 cases in the series is given in the following tables:—

TABLE 1—SHOWING INCIDENCE OF AGE

Years	*No. of cases*
15—19	5
20—25	34
26—30	32
31—35	6
36—40	10
41—45	8
46—50	5
Total	100

TABLE II—SHOWING INCIDENCE ACCORDING TO RACE

Race	*Percentage*
Hindus	31
Muslims	49
Sikhs	20

There was a history of exposure in 65 per cent cases and all these cases gave a history of exposure more than 2 years back.

TABLE III—SHOWING INCIDENCE OF SYMPTOMS AND SIGNS

Symptoms and Signs	*Percentage*
Frequency of micturition	71
Urethal discharge	62
Dysuria	53
Loss of sexual power	29
General weekness & loss of appetite	29
Slight gluing of the meatus	16
Loss of concentration	16
Dyspepsia and flatulence	14
Frequent and painful erections	12
Urgency of micturition	10
Night discharges	10
Sensation of fullness of the rectum	10
Retention of urine	9
Low grade fever	6
Nervousness	6
Painful coitus	6
Premature ejaculation	6
Sensation of fullness of the bladder after micturition	5
Hæmaturia	5
Prostatorrhœa	4
Restlessness	4
Weakness of eye sight	4
Sensation of fullness of the abdomen	4
Constriction of the chest	3
Stricture urethra	3
Occassional hæmospermia	3
Muscular cramps	2
Burning of the soles & palms	3
Hypospadias	1
Phimosis	1

ACKNOWLEDGMENTS

I am grateful to Dr. Harbhajan Singh, F.R.C.S., Medical Officer I|C Venereal Out-patient Department, Mayo Hospital, Lahore for his kind guidance, to Dr. A. N. Goyl, Professor of Pathology, K. E. Medical College, Lahore, for valuable help received and to Dr. M. A. H. Siddiqui, M.S., F.R.C.S., Medical Superintendent, Mayo Hospital, Lahore, for his kind permission to carry out the present research work in the Mayo Hospital, Lahore.

I have also to pay a deep debt of gratitude to Dr. M. A. Shah, M.S., Professor of Anatomy, Dow Medical College, Karachi, who has kindly gone through this paper.

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CASE NOTE

TOXICITY OF D. D. T

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INTRODUCTION

With the end of this fateful war we have at our disposal a great number of outstanding scientific discoveries for use with advantage in civilian life. We are already making full use of penicillin and other chemotherapeutic agents.

One of the greatest discoveries of the war was D.D.T. though really discovered in 1874 by a young German chemist.

It was in 1944 when I was in the army that I started appreciating the effectiveness of this wonderful insecticide against all insects except I think the blue bottle fly which will infest the sprayed area after a couple of hours. D.D.T. powder and watery suspension are not toxic as they are not absorbed from the skin and alimentary canal while the 5 per cent D.D.T. in kerosene oil, the usual solution employed is absorbed through skin and alimentary canal and is toxic on prolonged extensive contact to adults. The D.D.T. or kerosene oil individually do not give any patch reaction when tested separately while in solution it produces erythema vesicles and bullæ proving that there must be some chemical alteration in the solution making it toxic. The toxic effect has been recorded mainly as (1) dermatitis of various degrees, (2) feeling of heaviness and aching in limbs accompanied with muscular weakness, (3) spasms of the extreme nervous tension which improves partially on prolonged rest, after removal from the exposure of D.D.T.

Hill and Robinson have described a case of an African child aged 1 year who drank 1 oz. of kerosene with 5 per cent D.D.T. He immediately coughed and vomited, became comatose, developed tremors and convulsions and died in an hour and a half after appearance of the symptoms due to paralysis of the respiratory centre, four hours after taking the draught,

In the year 1945 I came across the following case of poisoning by D.D.T. in an infant.

In the middle of the night a Captain felt that there were too many mosquitoes in the room so he sprayed D.D.T. on the closed room for about 5 to 10 minutes with a flit gun while his 12 days old infant was sleeping there. Next morning it was found that the infant had developed deep jaundice and she died by the evening. She had vomiting, slight œdema, anuria with increasing jaundice. There were no signs of sepsis any where. The next child of the same Captain was born about a year afterwards and was healthy thus excluding the possibility of icterus gravidarum.

I am tempted to report this case as it may be of great interest to the research workers in view of the toxicity of D.D.T. to infants and children and its effect on liver as we don't have to deal with such individuals in the army.

JOURNAL OF THE

INDIAN MEDICAL ASSOCIATION

CALCUTTA, JANUARY, 1948

LEPROSY

With modern knowledge of science leprosy still remains one of the mysterious diseases. It is also a malady with which much taboo and superstition are associated. Unfortunately these are not confined among the laity but also among a large number of the medical profession. It is estimated that there are altogether about 5 million lepers in the World. Out of this about one million are in our country. Some 250,000 of these are infectious. Leprosy is prevalent along a belt of contiguous portions of West Bengal, Bihar, Orissa and Madras; while an area of moderate incidence lies along the Himalayan foot hills across Northern India. The percentage of population affected in these areas vary from 2 to 5 per cent. In this country and in Africa leprosy is common but generally mild. It is severe but less common in the Phillipine Islands and parts of South America; common and severe in South China, Burma and parts of South America. The reason is difficult to explain. In India the milder 'neural type' is commoner and the 'lepromatous type' is less severe and progressive than one reads in the text book.

Little is known about the spread of leprosy except its causal agent—an acid-fast bacillus. Animal inoculation has failed to transmit and propagate this bacillus. This has resulted in the failure to determine the means by which the infection is transmitted from man to man. It is now agreed that the disease is of low infectivity for man but there is no unanimity of opinion how undernourishment and close association with lepers in a condition of poverty and dirt are the main predisposing factors. It has not also been clearly explained why and how at the end of the middle ages leprosy practically died out in Western Europe. Poverty and malnutrition were both common during this period nor leprosy was confined only to the poor. It has been reported that African soldiers during the World War II, living under modern hygienic conditions developed leprosy. On the other hand a few Europeans imprisoned in Far East developed leprosy.

Since leprosy was known during the ancient times the treatment has changed from time to time. Even a few decades ago application of pulverised black snake or tortoise blood over the diseased parts were the method of choice. Chaulmoogra oil was known to the ancients of our country as a remedy of this disease. This drug and its derivatives are now used as standard treatment although results are not uniform in all hands. Recently encouraging results have been reported from the use of sulphones[1,2] Trials on more patients are necessary before any definite conclusion is drawn. The main drawback of this drug is the expense for its general use. Calculating that a patient requires one thousand five grain tablets of diasone (a sulphone compound) for one year, the cost runs to about Rs. 85/-. Because lepers are generally poor this expense will ultimately be a state obligation, which few state can afford. The cost can be brought down if the manufacture of the drug is taken up by the government because the raw materials for manufacture are cheap.

There are two main difficulties in the treatment and control of leprosy. Firstly infectious cases are not detected early. The affected persons do not volunteer information for fear of social boycott or shame. He spreads the disease for several years before it is detected. Secondly the long drawn present day treatment is painful and difficult to complete and even when completed the results are questionable in lepromatous type. The Bhore Committee are of the opinion that any plan for anti-leprosy work should make provision for[3] (*a*) the investigation of leprosy as a public health problem in local areas (*b*) the organisation of curative and preventive measures in those areas in which the prevalence of the disease is shown to be sufficiently high to require such measures (*c*) the stimulation of voluntary effort to supplement the work accomplished by the public authority and (*d*) education of the public in order to secure their intelligent co-operation in the anti-leprosy campaign. In connection with the efficient working of (*a*) and (*b*) the Committee recommended the establishment of a Central Leprosy Institute for the active promotion of leprosy research. In order to stimulate anti-leprosy work the

[1] Muir, E.—*Leprosy Rev.*, **17**:87, 1946.
[2] *Idem—Brit. M. J.*, **1**:798, 1947.
[3] Report of the Health Survey and Development Committee. Vol. II, p. 190.

committee have put forward the following proposals for short term programme—(1) The creation of Provincial Leprosy Organisations (2) An increase of the existing provision for institutional treatment—out-patient and in-patient (3) Development of group isolation colonies (4) Substantial financial help to voluntary organisations engaged in anti-leprosy work.

In the presidential address at the All-India Leprosy Workers Conference held at Wardha on the 30th October, 1947, Dr. Jivraj N. Mehta,[4] Director General Health Services drew attention to the problem of rural leprosy and advocated the recruitment of non-medical workers from the rural population. These workers have the necessary background of knowledge and experience of village life and the conditions to enable them to fit into the rural environment and to assist in the development of anti-leprosy work on sound lines. It is also essential that in the programme of training workers, emphasis should be laid on social service, so that men and workers who are trained will be motivated by a desire to give their best to the career on which they enter. Some progress has been made in the provinces of Orissa, Madras and Bengal in the establishment of village colonies for isolation. In this pioneer work the contribution of the Christian missionaries, mostly non-Indian, deserves high praise and illustrates the spirit of service against this scourge which should be widely emulated.

As India is rapidly expanding her industries, the danger which industrialisation is playing in the dessemination of leprosy should be tackled immediately. Healthy village workers are now being increasingly drawn to industrial areas where they are contracting leprosy from other workers coming from other areas. These people on their return are spreading the disease in their villages. Much vigilance is necessary in order to combat this source of spread.

[4] MEHTA, JIVRAJ N.—Presidential address at the All-India Leprosy Worker's Conference, Wardha—*J. Indian M. A.*, **17**: 54, 1946.

WANTED

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CURRENT TOPICS

THE MEMBERSHIP

The following is one of a short series of articles published in the *Lancet* for all candidates to pass their examinations at the first attempt:

Some thirty years ago when I took the membership examination we were seventeen candidates assembled in the library of the College answering the written paper on two successive afternoons, and entertained to tea complete with cream buns and a napkin handed to each candidate on a tray by a liveried butler. Today, nearly six hundred candidates write the paper the reasons for the increase in number are obvious to everybody.

In the past, medical education and training have been thought to be a most liberal education; but unfortunately specialism has reduced the intellectual level of medicine. The College, by its cultural and academic activities, endeavours to keep up the standard of medicine, and, in preserving the structure of the membership examination as a test of general medicine and general knowledge, it continues to fight the battle against narrowness of outlook and extreme professionalism. Clearly the value of the M.R.C.P. diploma is to show that a man is good enough to be a consultant in medicine.

Background—As one who has groomed a large number of candidates for the examination I am convinced that a great many present themselves before they are ready. They need to be more mature in experience. Formerly a man had often done three years of house-appointments before he went up for the examination. He is the ideal candidate. The practice of medicine cannot really be set down in books, and all good examiners know that the best questions are those which cannot be answered out of the pages of books. There is the story, doubtless untrue, of an Indian candidate who left in anger three minutes after the written examination started. On his way out he pounded the question paper with his fist in front of the invigilating censor and exclaimed in anger"—This is not in Tidy."

Read up-to-date reviews of medicine and allied subjects. Get the latest copies of Physiological Reviews, Medicine (Baltimore), the Quarterly Journal of Medicine and other quarterly journals in special subjects. Read Abstracts of World Medicine, annotations in the *Lancet*, and the lectures delivered at the College right up to the date of the examination.

Answering Questions—Since very often the candidate enters the examination room in an acute anxiety state, he should make certain that he understands the question asked. In extreme cases he may write for half an hour on osteitis deformans when the question concerns arthritis deformans, or he may even write an essay on impetigo when vertigo was intended. An error which is almost universal among examination candidates is to put into the answer all sorts of things that are not asked. A famous professor repeatedly addressed his class on this subject: "When I ask you for the description of a lion's tail I do not wish to see a description of the lion himself." You should read the questions very carefully, make a plan for each answer, answer only what is asked, try to be precise and concise, and whenever possible weigh the evidence for and against a particular view.

Too often a candidate merely glances at the question, sees the name of a particular disease, and then covers innumerable pages with everything he knows about that disease. And even where he fails to make this error, he is unlikely to use whatever critical faculty he may possess in the discussion of the subject in hand. Indeed, concise statements made on good evidence are seen much too infrequently in examination scripts. Nearly always answers could be greatly improved if only the candidate would first get out a plan of what he intends to say, putting emphasis on what is really important.

The man who strives to fabricate complete lists of diseases including rarities seen once in a lifetime rarely wins affection: every examiner longs for a concise answer which clearly states the general principles involved and the evidence for and against. Too many scripts show evidence in the writer of what has been called intellectual constipation and verbal diarrhoea. Bad spelling is of course rife in all examinations. I suppose most examiners school themselves to ignore it, though it must always be difficult to avoid being prejudiced against a candidate who repeatedly mis-spells a word which is actually printed in the question paper. Candidates unable to spell correctly should be careful to omit from their answers all reference to famous men in medicine whose names have been given to disease. But be sure to attempt one or both language questions. The marks gained for good translations may be enough to turn the scale in your favour.

In confidential moments the censors tell us that throughout the membership examination ignorance of chemistry is abysmal. Answers to questions on such subjects as tetany, alkalosis, or external uraemia are, they say, so pathetic as to suggest that the Chemical Society in 1947 must indeed be celebrating not its centenary but its foundation! One man is said to have alleged that children get lead colic from chewing lead pencils, and another believed that asbestos is a vegetable substance! Surely it is time that doctors realised we are passing through a chemical age.

Choice of Language—Americanisms inevitably creep into examination scripts—"the findings identicate those above," "you get a better effect if you pyramid the dose," "she was premedicated with iodine," "he studies the icterogenicity of batches of serum, or polyagglutinability of the red cells, or hyperrugosity of the gastric mucosa." Already an occasional candidate is liable to be "motivated by considerations of particle size," and another dabbles in the "quantitation of urobilinogen in the urine". I have heard someone speak of insolublising a chemical substance.

Candidates should avoid vulgar expressions—"he has rotten teeth," "he behaved like a drunk," "this is due to oesophageal piles," "that is the meat of the

history." References to the patient in the viva as a bloke or chap are almost as indelicate as to call the urinary tract "his waterworks." In addition to what is merely vulgar there is also slang—"she is a controlled fibrillator under digitalis," "he is a hypertensive heart," "I thought I tipped his spleen," "she has been bismuth mealed." (Though not all examiners are innocent of using slang themselves. Outside the College I have heard the question "Would you quinidine her?"—"Can an aneurysm cough up blood?"—"Prescribe me an expectorating mixture.")

Slackness in the use of words is a besetting sin of the modern doctor. The examinee who uses his mother-tongue to convey a precise meaning is a joy to the examiner, and unfortunately that joy comes out rarely. Lack of precision by the bedside, like the failure to use controls where this is possible, brings medicine into disrepute.

One knows of instances where chemists, mathematicians, engineers, and astrophysicists despise the work of practising doctors. Their accusation against us is that although we live in an age of precision-instruments we shrink from the use of precise methods and constantly fail to define our meaning. That this is true can be seen by taking up current medical journals, let alone examination answer scripts. It is therefore not surprising that the examination candidate of to-day cannot be persuaded to describe the size of lesions in inches or centimetres.

The story is well known of two dermatologists as far apart as Frankfurt and Baltimore who were annoyed with each other because the one described certain lesions as being the size of a dime and the other the size of of pfennig. How can doctors be cured of comparing lesions in size to coins, fruits, and nuts? One frequently meets expressions such as "the size of a halfpenny, a threepenny bit, a grapefruit, an orange, a tangerine, a tomato, a nut, hazel, an almond, a walnut, a cocoanut, a pea, a bean, a grape, or an olive." One would think men would have the sense to see that in any case there are several varieties of olive, many different sizes of tomato and tangerine, and at least two varieties of threepenny bit! The candidate who excelled at this type of description was he who described a lesion as the size of a large pea or small bean. An examiner once took to task a man who said a tumour in a patient's neck was the size of an egg. "Well, what sort of an egg?"—"A hard-boiled egg, sir."

The use of meaningless expressions is quite common—"obviously poorly," "below par," "relaxed throat,' "eyestrain," "sallow," "pale-looking," "toxic-looking." Loose terminology is rife. Thus a man will say "the patient has no temperature" when he means no fever, "the temperature chart was swinging" (remittant fever), "that patient has frequency of micturition" (increased frequency of micturition), "the patient has tubercular peritonitis" (tuberculous peritonitis), "he was given morphia" (morphine), In a viva a candidate will sometimes go to great trouble to avoid using precise terms such as fibrous ankylosis of a joint, maculopapular pink eruption on the skin, left homonymous hemianopia, partial aphsia, granulocytopenia, or zoster virus.

Nobody suggests that examiners take off marks for all these petty mistakes. Obviously they must ignore such errors, otherwise they would never get through the dreary business of marking the papers in time for the next stage of the examination. But all this slackness leads sooner or later to loose thinking and to fundamental errors of principle. Thus it is common in clinical examinations for a man to say that he heard bronchial breathing over a certain point on the chest wall. When questioned about this he will admit that he has found no restricted movement, diminished percussion note, or alteration of voice sounds. The examiner swiftly discovers that he is not familiar with the physical signs of consolidation of the lung and that he is completely confused as to the difference between harsh vesicular breath sounds and bronchial breath sounds, and cannot define either of these. In the membership examination such a man fails, and richly deserves to fail. After all the membership is equivalent to an honours examination, and a man who displays such ignorance deserves to fail even in a pass examination like the Conjoint.

The Clinical Examination—It is imperative that you should get through the clinicals in order to survive to the next stage of the examination. You just can not afford to get any of the physical signs wrong.

If often happens that candidates invent signs to satisfy an imaginary diagnosis. Worse than this, a man imagines that he hears an aortic diastolic murmur and is quite content to diagnose aortic incompetence although there is no evidence of enlargement of the heart, no collapsing pulse, and no low diastolic blood-pressure. Many candidates fail to realise that the apex-beat of the heart may be found anywhere between the posterior axillary line on the left side and the nipple line on the right side. Cases of adults with long-standing left fibroid lung are often misintrepreted by men who fail to feel far enough out to the left for the apex-beat. Innumerable candidates use the expression "diffuse apex-beat," which is absurd because the apex-beat is defined as a point and therefore cannot the diffuse. Neither has the expression "diffuse apical impulse" a precise meaning. Candidates who use this expression intend to convey that the apical impulse is thrusting, heaving, or forcible, and should say so.

Nearly every examinee will misdiagnose a case with polycystic kidneys, and hosts of men cannot define the difference between an enlarged kidney and an enlarged spleen, The number of men who can demonstrate that they know how to examine the hip-joint, or any other joint for that matter, is far too small. There is a stupid idea in the minds of many candidates that a patient with joint diseases, bone diseases, or deformities of the spine or limbs belongs to surgery and not to medicine!

In the clinicals a candidate should never hedge. "This patient has a tendency to a haemorrhagic rash"—either he has a haemorrhagic rash or he has not. "There is the very slightest element of an aortic leak"

either the aortic valve leaks or it does not. "There is a certain sleepiness about the eyelids"—either the patient has ptōsis oculi or he has not. If a man can not make up his mind about these things surely he is not ready to take the exam. There is the story of the examiner (not a censor of course) who was a bully. He became quite impatient with an Indian candidate and bawled at him: "Answer me, yes or no. Has this patient got mitral stenosis?" The gentleman from the East edged up to him until he was quite close and gave the answer in a whisper—"Perhaps."

The examinee who cannot handle with confidence a simple neurological case is clearly not ready for the examination. Yet few men have been properly taught how to elicit the plantar-response. The region of easiest elicitation of this reflex is the outer border of the sole of the foot and the stimulus should always be applied here. An extensor response may sometimes be obtained from this region when the inner border of the sole yields a flexor response. Examiners get tired of putting a blue penicil through the erroneous expressions—"extensor Babinski sign," "his Babinski's are flexor," "the Babinski is plantar." What Babinski described was the extensor plantar response. It is far better therefore to use the expression "extensor plantar response" or else to say "positive Babinski reflex" or "up-going toe."

Candidates should have sufficient imagination to diagnose classical syndromes and diseases from what they have read. Supposing you have never seen a case, say, of haemochromatosis, then you must be sufficiently familiar with its symptoms and signs to be able to recognise it. You will get a poor mark if you say such a patient has diabetes, fibrosis of the liver, and pigmentary changes which are in no sense correlated.

If you are not yet mature in your knowledge of medicine, you will commit yourself out of your own mouth. This is the sort of thing which will happen to such a man over his long case:

"Then the main points you have found here are weakness and shortness of breath for three months, pallor, purpura, universal enlargement of lymph-nodes, and the spleen enlarged to the level of the umbilicus."—"Yes."

"That is correct. Now please discuss the diagnosis."—"It might be pernicious anaemia."

"Oh! Does a patient with pernicious anaemia have a spleen like this?"—"No."

"Or enlargement of the lymph-nodes?"—"No."

"Or purpura?"?—"No."

"Well then, suppose we think of something else."—"It might be thrombocytopenic purpura."

"Oh! Does such a patient have enlarged lymph-nodes?"—"No."

"Or a spleen like this?"—"No."

"Well now, what else have you to suggest?"—"It might be acholuric jaundice."

"Oh! Has this patient ever been jaundiced?"—"No."

"And in acholuric jaundice are the lymph-nodes enlarged?"—"No."

"And does purpura usually occur?"—"No."

And so the bell rings and the candidate has never even mentioned leukæmia! Here he is up for an honours examination, having had forty minutes to take the history, elicit the signs, and think about the diagnosis. Does he suppose the blood diseases will be sorted out for him by technicians who do blood counts? Clinical medicine has not begun to dawn on such a man. How can a censor possibly consider him fit to advise another doctor who calls him in consultation over a case? He would make the problem all the more confused.

The Viva—If you survive until the first viva remember that specimens and photographs are used mainly as pegs upon which to hang questions. Thus a photograph of a patient with obvious acromegaly evokes questions on gigantism, basophilism, chromophobe adenoma, and suprasellar cyst. You must know the clinical features, pathology, and treatment of all such syndromes. Equally you must be prepared to interpret radiographs, electrocardiograms, blood-counts, and other laboratory reports.

When shown a museum specimen in the viva you should identify the organ and follow this up with a description of the size, shape, and colour of the pathological lesion. The diagnosis should always come last; otherwise if you come to the wrong conclusion, you will inevitably lose everything. When it comes to describing the colour of the normal organs of the body most men are singularly bad. It is scarcely possible to persuade a candidate in a viva to say that the suprarenal cortex is golden-yellow, the medulla slaty-grey, and the normal thyroid red-brown. But scattered through examination scripts one sees such confusing descriptions as "the colour of a daffodil, an iris, a rose, a marigold, or a plum."

Fun for the Censor—Does a censor ever get any fun at all out of the examination? I like to think so. One candidate, I am told, wrote: "examination of the fundus reveals papal oedema," and another "it is said that the face of a cretin is like that of a constipated owl, but perhaps this is a slight exaggeration." An examiner is occasionally privileged to give an extra mark to a candidate with exceptional powers of human understanding, such as the man who said of the treatment of insomina—"an attractive and agreeable marriage partner is advocated by many." At one time a question was asked on anthrax, but it is not recorded whether an extra mark was given for the statement that "in the case of an outbreak of anthrax the animal must be burned or buried alive and the woolsorter must be boiled." Neither do we know what marks were allotted to the man who wrote "in scarlet fever the patient should be strictly isolated and should have connexion with no-one except the nurse."

Sometimes, I understand, a number of examination scripts contain a remarkable answer which can only have come from a whole class of men having misunderstood a lecturer. The famous example is that in answer to a question on the treatment of haematemesis, where countless candidates said the patient must be given oyster soup. This was traced to a lecturer lately imported from Glasgow who had told them to give the patient "ice to suck." One cannot dismiss this subject without quoting the statement of a very earnest candidate who obtained good marks throughout a whole exam—"in hypoglycaemia it is possible by the judicious use of adrenaline to restore the patient sufficiently towards consciousness that he can swallow himself."

In the final viva be prepared for questions on the history and classical literature of medicine. On the whole the censor of today despairs of meeting a really erudite candidate. One hot summer, during the July examination, one of them kept asking who was the author of An Essay on the Shaking Palsy. No answer was forthcoming, and in the end the President is said to have remarked kinly that in this modern age one could not expect to meet a candidate who had read anything beyond a textbook. In the words of a past president, himself a master of erudition, "it is a bleak prospect."—*Lancet* **2**:313, 1947.

NOTES AND NEWS

BOGUS MEDICAL DEGREES

Mr. C. D. Venkatramanan, Second Presidency Magistrate, George Town, on 23-11-47 found one P. S. Kandaswami Pillai guilty of having used bogus medical degrees and sentenced him to pay a fine of Rs. 150 in default to undergo simple imprisonment for one month.

The accused was charged under Sec. 6-A of the Indian Medical Degrees Act of 1916.

The prosecution alleged that the accused had suffixed abbreviations to his name, *viz.*, Doctor of Honour, M.D., M.S. P.H., and D.A., (bogus medical degrees) which were not conferred or granted by any recognised institutions.

The circumstances in which the case was detected are as follows: One T. Kannan a workman of the 'Wimco' factory went to the accused on Oct. 31, 1945 for treatment of piles, and obtained a medical certificate to produce before the Manager of the factory with a view to getting lighter work allotted to him. The factory manager, who grew suspicious of the certificate sent it to the Registrar of the Madras Medical Council to ascertain whether the doctor (the accused) was a registered Madras Medical Practitioner. The Registrar called upon the accused to produce the authority to style himself as a registered medical practitioner. The accused replied stating that he had been qualified by the Chicago Medical Council of Homeopathy at Calcutta and that he had been registered by the Central Board of Indian Medicines, Madras. Thereupon the Registrar contacted the Surgeon-General with the Bengal Government, Calcutta, and got a reply stating that the diploma of the accused was not registrable under the Bengal Government's Act. The Registrar then addressed Government urging them to take action. After obtaining the necessary sanction from the Government a charge sheet was filed against the accused.

The accused in his statement said that he had studied up to the Third Form and confessed that he did not know what the abbreviations he had suffixed stood for.

The Magistrate held that the accused had used such bogus abbreviations deliberately with a view to creating the impression that he was a qualified doctor and the diplomas he produced were not at all recognized or granted by the local Government. Holding that the offence was a serious one, except for the fact that the accused had admitted that he had stopped using these medical degrees, the Magistrate sentenced him to pay a fine of Rs. 150 in default to undergo simple imprisonment for one month. The accused paid the fine.—*Indian Express.*

LEPROSY WORKERS' CONFERENCE

The following resolutions were passed at the All-India Leprosy Workers' Conference held at Wardha, C.P., in October 1947:

1. This Conference expresses satisfaction and deep appreciation at the recognition of the basic importance of leprosy problem in the National Constructive Programme of the country and urges all the leprosy and social workers to make an earnest effort to harness all the progressive forces of the country for the furtherance of an all-round active interest in the control of the disease.

2. In the opinion of this Conference the Central Government and the Provincial Governments have not hitherto paid adequate attention to the pressing problem of leprosy in the country, and it urges the Governments and Local Self-Government Bodies to regard leprosy work as an important item in the nation's constructive programme and to take immediate and adequate measures for leprosy control and relief. The Conference is in general agreement with the findings and the recommendations of he "Report on Leprosy and its Control in India" by the Committee appointed by the Central Advisory Board of Health in 1941, and emphasises the speeding up of the implementation of these recommendations. It also notes with satisfaction that the Bhore Committee have based their recommendations on this report.

In order that these recommendations may be carried out effectively, this Conference recommends to the Central Government that a Special Leprosy Officer be attached to the Ministry of Health at the Centre, and to the Provincial Governments to create a similar post in their respective provinces where leprosy is a serious problem and, if such a post does not already exist.

3. This Conference wishes to draw the attention of the Government to the fact that the medical profession, and the medical and public health authorities in general, have shown apathy regarding leprosy acti-

vities, and as a result the progress of leprosy relief and control has suffered. This has led to the unsatisfactory nature of the medical services rendered in the majority of leprosy clinics and dispensaries. The Conferences urges the Government to take steps to remedy the situation by ensuring that both the medical officers and the supervisory staff are adequately trained along the lines indicated in resolution No. 4.

4. In view of the urgent necessity of developing an adequate anti-leprosy campaign throughout India, it is imperative that Government takes steps to organise courses of training on the following lines:—

(*i*) Facilities for the teaching of leprosy to undergraduates should be improved, and adequately trained personnel should be appointed for the purpose in Teaching Hospitals. Further, the courses of intruction for leprosy should be included in the medical curriculum, and in order to maintain the interest of the students in this subject a question on leprosy should be included in the final examination fairly frequently.

(*ii*) Post-graduate medical training in leprosy is essential and this Conference recommends to Government that the following training courses should be established at an early date:—

(*a*) One month's elementary course, particularly in areas where leprosy is a public health problem.

(*b*) Refresher courses of a fortnight's duration for Civil Medical and Health Officers. Such courses are urgently needed in order that the senior officers may appreciate the modern outlook on leprosy and encourage the organisation of anti-leprosy measures in their districts.

(*iii*) A specialised course of at least 3 months' duration followed if possible, by three months' responsible appointment in a leprosy institution. This course is intended for medical officers who wish to specialise in leprosy, and it is recommended that no officer be appointed to a responsible medical post in leprosy work who has not undergone this training or its equivalent.

(*iv*) In addition to the training of the members of the medical profession, it is essential to make adequate arrangements for the training of (*a*) Sanitary Inspectors, (*b*) Health Visitors, and (*c*) Social workers in leprosy work.

(*v*) A suitable course of training in leprosy for recognised practitioners in Indian medicine be organised.

5. It is the considered opinion of this Conference that leprosy patients needing temporary hospitalisation for treatment of general diseases as well as for complications from leprosy should be admitted into the General Hospitals; non-infective cases in general wards and infective cases in general infectious wards. Although most Governments have accepted this principle, it is regrettable that it is not put into practice largely due to the attitude of the medical and other staff of such hospitals. This Conference, therefore, hopes that the Central and Provincial Governments will issue necessary further instructions so that the admission of such patients in the hospitals under their control is assured whenever necessary.

6. It is generally recognised that the only sure method of control of the spread of leprosy is the prevention of close contact between infective patients and healthy individuals, especially children, and that the only method of achieving this is by the isolation of infective cases. Several types of isolation are possible, such as home isolation, village or group isolation (including night segregation), agricultural and occupational colonies, and isolation in sanatoria and hospitals.

It is the opinion of this Conference that home isolation, if effectively carried out, is the cheapest and most desirable from the psychological and social points of view. But under present conditions this method of isolation is not applicable on a wide scale. Efforts, however, should be made to create the conditions necessary for effective home isolation and these should include: (*i*) a separate room, if possible a detached room, for the patient with separate utensils and bedding, (*ii*) proper supervision by health visitors specially trained in leprosy, (*iii*) proper protection of children, and (*iv*) adequate education of the inmates and the development of a public health sense in the community. In order to encourage such isolation the governments are urged to grant financial assistance in suitable cases.

While leprosy hospitals and sanatoria have their place in the control of the disease, the Conference feels that the most suitable method applicable to India with its large leprosy problem, especially in the villages, is the isolation in agricultural or occupational colonies and/or group isolation centres with adequate facilities for treatment. This Conference, therefore, recommends that immediate steps be taken by the Central and Provincial Governments to start such colonies and/or group isolation centres in those parts of the country where leprosy is a serious problem.

This Conference while recognising the importance of rural leprosy would also draw attention to the need of organising adequate relief and prevention of leprosy in Urban areas and emphasises that while home isolation where possible should be taken into consideration as a desirable method in large towns, the need for institutional segregation and the relief of the needy and disabled must be kept in mind.

7. The Conference is of opinion that there is an urgent need of amending the existing legislation in the light of modern knowledge of the disease since the present legal measures are of no practical value, and the Government of India is requested to take necessary steps to introduce humane and enlightened legislation.

8. In the opinion of this Conference an indispensable preliminary to the success of any legislation will be the education of the public on a wide scale. In view, therefore, of the great importance of educating the public and to adopt a rational attitude towards leprosy, this Conference recommends that the following agencies be used on a wide scale for this purpose: (*i*) Press, (*ii*) Radio, (*iii*) Films, (*iv*) Exhibitions,

and (*v*) Propaganda vans and such other means of educating the public as are available. Further this Conference urges the Government to give all possible financial and administrative assistance for such work.

9. Inasmuch as the distressing problem of leprosy is one fundamentally connected with Public Health and Hygiene, and as the need for extensive education along this line is universally recognised, this Conference requests both the Central and the Provincial Governments to include in text books, from Standard I through to M.S.L.C., lessons on various aspects of public health and hygiene, including the subject of leprosy, its cause and prevention.

10. That in the opinion of this Conference efforts should be made by leprosy workers and leprosy organisations to contact and influence other groups such as the conferences of medical, social, agricultural educational and other administrative workers, the press, etc., in order to stimulate them to take an active interest in leprosy in the light of modern knowledge.

11. This Conference urges that leprosy workers including doctors, assistants, social workers, etc., be adequately paid and that they should be eligible for pensions, provident fund and house allowances, etc. with a view to encouraging leprosy work.

12. This Conference is of opinion that though extensive surveys are not at the present moment necessary, especially in provinces where considerable work of this nature has already been done, yet there is a necessity of undertaking periodical surveys to assess the value of control measures instituted as well as to estimate the incidence of the disease in localities as and when reported to be high. This Conference, therefore, recommends that Provincial Governments should maintain a Leprosy Survey Unit where it is already not in existence.

13. This Conference draws the attention of the Government of India to the necessity of further developing research in leprosy in all its aspects, and urges in this connection the need of establishing in India a Central Institute for Leprosy Research or a Special Section in the proposed All-India Medical Institute.

14. In the opinion of this Conference it would be unwise to discard completely the Cairo Classification, but it recommends that this Classification be suitably modified to rectify certain obvious defects and to bring it in line with recent advances.

15. In the opinion of the Conference the sulphone drugs mark an important advance in the therapeutics of lepromatous leprosy. The treatment, however, has certain limitations and is still under trial. The Conference while hoping that this group of drugs will prove more effective in the treatment of lepromatous leprosy than any other known remedy, is of the view that until more work is done caution should be exercised in their use. While there is a place for these drugs in the treatment of selected lepromatous cases, hydnocarpus oil and its derivatives still remain the routine treatment of leprosy.

16. While appreciating the work done by the Indian Council of the British Empire Leprosy Relief Association, this Conference is of the opinion that in view of the present political development in the country, the title and the constitution of the Association should be suitably changed.

17. This Conference recommends to the Government of India that the International Leprosy Association be invited to hold in India the next quinquennial session of the International Congress on Leprosy.

18. This Conference recommends that a Committee of this Conference consisting of the following members be appointed to take necessary steps for the implementation of its recommendations; and to collect a fund necessary for the purpose. The Committee is further authorised to frame the necessary rules and regulations for the conduct of its work.

Drs. Jivraj N. Mehta, Director-General of Health Services, New Delhi; M. D. D. Gilder, Minister for Public Health, Bombay; R. G. Cochrane, Hony. Director of Leprosy Campaign, Vellore; Dharmendra, Research Worker, Indian Council of the B.E.L.R.A School of Tropical Medicine, Calcutta; Shri Baba Raghava Das, Lucknow; Drs. Sushila Nayyar, Sevagram, Wardha; P. Sen, British Empire Leprosy Relief Association, Bengal Branch, School of Tropica Medicine, Calcutta; A. C. Rabello, Kallianpur, 130. Hill Road, Bandra, Bombay; Balbhandra Misro, Provincial Leprosy and Health Publicity Officer, Cuttack; Shri Shrikrishnadas Jaju, Sevagram, Wardha (Treasurer); Shri T. N. Jagadisan, "Sadhana", Chandrabagh Avenue, Edward Elliots Road, Mylapore Madras (Secretary); with powers to co-opt.

19. This Conference places on record its deep appreciation of the valuable services rendered by the Chairman and the members of the Maharogi Seva Mandal, Wardha, in convening this Conference and making successful arrangements for the same.

20. This Conference further thanks Shri A. V. Thakkar for kindly inaugurating the Conference and Dr. Jivraj N. Mehta for presiding over it. The Conference also thanks Dr. M. D. D. Gilder and Dr. R. G. Cochrane for having presided at subsequent sessions.

COLLEGE OF PHYSICIANS AND SURGEONS OF BOMBAY

The College of Physicians and Surgeons of Bombay have organised a series of post-graduate lectures in the subjects of Medicine, Surgery, Midwifery and Gynæcology, Ophthalmology and Child Health.

The object of organising these lectures is to impart higher knowledge to the candidates going up for the post-graduate diploma examinations. The lectures will also be open to the members of the medical profession and to the students interested in the subject.

Details regarding the lectures may be obtained from the Secretary of the College, Hospital Avenue, Parel, Bombay.

* * *

Out of five candidates who appeared at the D.O.M.S. Examination held in December 1947, the following one has passed:—

Dastur, Khurshed Jehangir.

The following candidate who appeared at the Final L.D.S., C.P.S. Examination held in December 1947 has been declared successful:—

Gama, Joseph Noel.

* * *

The College of Physicians and Surgeons of Bombay will hold the F.C.P.S. Examination under the New and Old Regulations on Monday the 5th April, 1948.

Application in the prescribed form for candidates desirous of appearing at the examination under the New Regulations should be made so as to reach the Secretary of the College before the 5th January 1948.

Application for admission under Old Regulations should be made so as to reach the Secretary of the College before the 5th February 1948. There is no prescribed form. Application should be made in writing, stating the subject and the group of specialization for the examination. The necessary certificates must accompany the application.

SOCIAL ASPECTS OF LEPROSY

P. Sen, M.B., Bengal Branch of B.E.L.R.A. writes in *Leprosy Review*, **19**:123, 1947:

In recent years there has been a growing evidence of recognition in general medicine of the inadequacy of medical care related only to pathological processes localized in body tissues and of the significance of adverse social conditions and maladjustments in producing excessive or repressive emotional reactions and strains. Such recognition along with the inadequacy of established methods of clinical and laboratory examinations in determining such causes of illness have given rise to a body of concepts, methods and techniques comprising what is called Social Medicine.

These concepts, methods and techniques if suitably applied in leprosy work will not only improve the quality of our medical work but also go a long way in the prevention and control of leprosy.

General Principles of Social Medicine.—Correlated studies have brought forth the following points the validity of which is being tested in many fields concerned with social medical work.

1. Disability results not only from impairment of function by organic disease but also from impairment of function by physical deprivations, strains, faulty habits and feeling of dissatisfactions, and its character, duration and severity are dependent not alone upon the physical causes of these disturbances but upon the characteristics and intelligence of the patient as an individual and upon the total situation of which he is the centre.

2. It is possible without any objective physiological tests to secure fairly accurate information about states of dissatisfaction as well as about states of physical deprivation and strain, and the conditions preventing them.

3. Measures which relieve these states are known and can be applied, thus reducing the disability they cause.

4. Disability from these states frequently complicates disability from organic disease and measures suitable for relieving both forms of disability must be applied in order to restore patients to the best health possible for them.

Adverse social conditions are significant as a cause of illness chiefly because of their power to disable. They act most adversely in recurrent and chronic diseases than in the acute, because in the latter cases the swiftness of onset and termination of the disease and the return to normal functioning within a short period lessens the liability that adverse social factors will play a large part in the prevention of recovery. Recurrent and chronic diseases, on the other hand, are characterised by more prolonged disability and need of a greater degree of adjustment requiring the patient's participation and thus adverse influences from the patient's personality and his social environment become more significant in the medical care.

Social Component in Leprosy.—Disease, all forms of disease, invariably affect the individual's social life. But no disease has ever had more dire social consequences for the patient's life than leprosy. This is a chronic affection which develops very slowly, the person living with it for many years before he finally succumbs. It is not very infectious, much less so than tuberculosis, and its infectiousness alone could not explain why society in all times of history has reacted so violently against it. There must be other reasons for it. Chief among them is probably the fact that the disease in advanced stages, disfigures and mutilates its victims in a frightful and disgusting manner; and this combined with the evil smell that develops from the ulcerating parts, makes the patient with leprosy a terrifying sight. Society always reacts very strongly to the physical appearance of a sick man. An aggravating factor in leprosy is that the disease is believed to be incurable. Apart from this social adversity, the diagnosis of leprosy affects profoundly the life of the patient in other ways. He must face immediately two problems, one related to his own welfare and the other to the welfare of those about him, particularly those most closely bound by ties of blood and affection. He must face the problem of a long period of treatment under conditions which may remove him from

his house and work, and which may require him to relinquish temporarily or permanently his responsibilities and opportunities. He must also accept the fact that he is a potential source of infection to others, particularly children, and must control his habits and behaviours with this consideration ever present in his mind. These are hard facts which have a disastrous effect upon the morale and emotional stability of the patient, and also upon the successful accomplishment of the essential plans for medical care. The problem of adequate treatment and prolonged observation necessitates an understanding of the patient as an individual so that the social, economic and occupational adjustment required by the plan of treatment may be fulfilled.

NEW ANTIDOTE FOR METAL POISONING

Percy Wallace writes:

An important drug, which will rank among the world's great medical discoveries, has been announced by the Medical Research Council of Britain. This drug is known as "Bal"—British anti-Lewisite. Its appearance means that arsenic can at last be fully exploited as a drug.

Doctors have known for years that arsenic kills some germs more efficiently than does any other substance. They knew it was of great value in treating chronic skin complaints and nervous diseases. But the use of arsenic has been limited by its own terrible effects on human tissues. The arrival of "Bal" means that these effects can be quickly overcome and often prevented.

The Medical Research Council have reported striking successes on 44 cases of poisoning by arsenic. Thirty-one of them responded to the treatment in a remarkable way. (The Council's carefully-worded report goes so far as to describe the response as dramatic).

The discovery of "Bal" began in the early years of the Second World War, when the most-feared chemical weapon was Lewisite. A drop of this colourless liquid on the skin can cause a terrible blister. Eyes splashed with it become permanently blind. Its vapour attacks the lungs, causing pneumonia and often death.

British troops were issued with an ointment which could prevent blistering if quickly applied to the skin contaminated by Lewisite, but could not save eyesight or halt the insidious internal effects of the gas.

The active principle of Lewisite is arsenic. What was needed was an antidote with the power to neutralise its effects deep inside the tissues.

A research team was formed at the Oxford University Bio-chemistry Department, under the leadership of Professor Peters. The team finally discovered a penetrating liquid which rapidly counteracted the effects of arsenic on the body. This liquid was called British anti-Lewisite before it was named "Bal".

Trials with human volunteers showed that "Bal" prevents blistering completely if applied to the skin within an hour of contamination. It saves an eye splashed with Lewisite if given within 20 minutes.

Today, two years later, "Bal" is proving equally effective against poisoning by the salts of mercury, and is used in treating heart complaints and other disorders. Of 26 patients with acute mercury poisoning, 25 recovered after "Bal" injections. It is now being tested against the toxic effects of lead, zinc, gold and other metals.

"Bal", latest in the series of British medical discoveries that included M. and B. and penicillin, is now to be mass-produced in Britain.—*British Information Services.*

TRAINING THE SPECIALIST

Few are content with present arrangements for the training of specialists. Undue weight is attached, particularly by the laity, to higher degrees and diplomas; and the extent and quality of teaching varies from one University to the next and from one department to another. In October, in the annual address to the Institute of Laryngology and Otology, London, Sir Francis Fraser, director of the British Postgraduate Medical Federation, suggested that the remedy lies in the competitive selection and progressive training of candidates, who before applying for a specialist hospital appointment should reach a standard imposed by their colleagues. As he pointed out, the Royal Colleges and the associations of specialists have recommended at least five to six years' postgraduate experience for each intending specialist, of which the first one or two years should always be devoted to general medicine or general surgery, and a year or more should be spent in scientific training and laboratory discipline. The programmes include higher degrees and diplomas, but these are not to be regarded as qualifying men as specialists.

Sir Francis Fraser favours progressive selection from the stage of senior house-appointments onwards, a process facilitated by the larger grants for medical education and the introduction of the National Health Service. The first stage of a registrarship should if possible be in a teaching hospital, but since the clinical material in a university teaching hospital is regulated by the needs of the undergraduate the registrar should go elsewhere for fuller practical experience, spending his second year perhaps in a regional hospital or a special department which has been approved for the purpose and where teaching can be supervised. The third stage of training will depend on the candidate's previous experience and aptitudes; he may return to his teaching hospital; he may be attached to a professorial department; or, if his bent is towards the treatment and management of patients, he may seek a further period of clinical experience. At some time all should have the chance of travelling to other centres in this country or abroad.

It is debatable whether courses are of much value to fully trained men, except to those who find it hard to synthesise their knowledge; certainly they cannot take the place of hospital appointments with graded responsibilities. The usual type of organised course is designed as an introduction to a specialty, but unfortunately it often enables candidates to obtain diplomas. Some of these diplomas should be regarded as simply qualifying their owners to start specialist training; few of them indicate that training has been completed. There is real danger, in Sir Francis Fraser's view, that London may come to be regarded as a purveyor of diplomas; and he proposes that the Royal Colleges and the university should work together to ensure that these higher qualifications take their proper place in the training. The experience in London, with its specialist teaching hospitals, is, he said, that the standard of teaching is generally higher in the branches where there is no diploma. The specialist hospitals are the basis of the institutes now being built up by the university, and as soon as possible the university will be asked to appoint a professor or reader to each.

Sir Francis sees a place for two types of course in each specialty. First, there may be a course, lasting about six months, in the fundamentals, with practical work supplemented by group discussions, lectures, and demonstrations; it should be preparatory and educative rather than vocational, and all those attending it should be able to go to central lectures in the basic sciences. Secondly, there should be courses designed to co-ordinate and systematise practical experience. An advanced revision course of this second sort, lasting some 8-10 weeks, makes heavy demands on teaching staffs, and it should be attended only by those advanced enough to benefit.—*Lancet*, **2**:586, 1947.

COMBATING CANCER IN THE SOVIET UNION

Dr. Wolf Fried writes:—The struggle against cancer, the dreaded disease which carries off hundreds of thousands of sufferers throughout the world every year, is regarded in the Soviet Union as a task of great state importance. In the U.S.S.R., where man is the most valuable capital, the government is unstinting in efforts and means for the solution of this difficult and complicated problem.

Soviet scientists are persistently studying the origin of malignant tumours and the biology of the cancer cell, the chemism of neoplasma and their nature, in their efforts to discover the secret of this scourge. Many research institutes of the Academy of Medical Sciences of the U.S.S.R. are working on this problem, which also forms the subject of research in the best clinics in the different Union republics, territories and regions of the Soviet Union. Hundreds of biologists, pathophysiologists, biochemists and other specialists have devoted themselves wholly to this cause. Their efforts are co-ordinated by a uniform plan.

Soviet scientists play a leading role in elaborating the theory of cancer. Already in 1910, the outstanding Russian microbiologist Nikolai Gamalai advanced the conception that malignant tumours form as the result of the penetration of the virus into the cell nuclei of man or animals. And in the same way as infusoria free themselves of bacteria which have penetrated into their nuclei by means of intensified multiplication and division of these nuclei, so the cells of animals infected with the cancer virus begin to divide rapidly, seeking to eject the virus into the protoplasm.

The theory of this venerable microbiologist found new, serious confirmation in the works of Professor Lev Zilber, Member of the Academy of Medical Science of the U.S.S.R. The original experiments conducted by this scholar led him to believe that the virus, having caused the transformation of a normal cell into a cancer cell, itself perishes or separates from the tumour as the modified cell has become an unfavourable environment for it. Therefore, says Zilber, the virus cannot be found in adult tumours. The tragedy of the research workers who exerted so much efforts in trying to find the cancer microbe was that they sought this agent there where it was no longer to be found in—the ripe cells.

In a comprehensive report on the origin of malignant tumours delivered at the November session of the Academy of Medical Sciences Professor Zilber gave a detailed analysis of the nature of the cancer germ. The Soviet virusologist thought that tumour viruses differ from the microbes of infectious diseases and that grounds exist justifying their classification as an independent group of morbific agents.

New valuable observations have also been made by Professor Shabad who is conducting research into the origin of cancer of the mammary glands in mice, the so-called lactic factor. This agent has been discovered by serological means, which opens the way for further research into its nature. Shabad has discovered that under certain disturbances in the functions of metabolism in the organism cancerigenic substances are formed that cause the appearance of the tumour.

Profound research into the biochemistry of cancer is being conducted in the laboratory of Hero of Socialist Labour Professor B. Zbarsky. This has shown that the amino-acid content of albumins of tumours differs from the same in normal organs or tissues. It appeared that the change in the amino-acid content in cancer also concerns the albumins of organs not affected by metastasis and remote from the tumour. Zbarsky succeeded in establishing that the specific variation in the amino-acid content of albumins was also present in the nails and hair of cancer patients. There is reason to suppose that his data can be utilised for purposes of diagnostics.

Along with the achievements of experimental oncology, great successes in treating malignant tumours situated in parts of the body difficult of access have been attained by Soviet surgeons and roentgenologists. It is well-known that cancer of the thoracis section of the esophagus is practically out of reach of even the most skilled surgeons. Therefore, prime importance attaches to the original method of recovering the

thoracic section of the esophagus, as elaborated by Professor B. Kazansky of Moscow. This skilled Soviet surgeon reaches the esophagus through the pleura and chest-wall, with due consideration to the specific reactions of the organism in the process of the operation.

Professor Kazansky has already performed seven pleural resections of the esophagus all of them with a favourable outcome. If we take into consideration that prior to this almost any attempt to operate the esophagus had a fatal outcome in almost 100 per cent of the cases, we must regard Kazansky's success as exceptional.

Remarkable results in the surgical treatment of cancer of the cardiac orifice were achieved by Stalin Prize Winner Professor A. Savinykh of Tomsk, Siberia. Until recently, this region also was a prohibited area to the majority of surgeons. After Professor Savinykh had performed 143 radical operations of cancer of the cardiac orifice, 59·5 per cent of which were successful, the new method was introduced into the practice of oncological institutions.

One of the most outstanding Soviet roentgenologists, Merited Scientist Y. Dillon, has proposed an effective method of treating cancer of the lungs by means of X-rays; from various small, concentrically situated fields strong doses of X-rays are directed onto the tumour. The radiant energy destroys the cancer cell; but leaves the normal tissues, in the sphere of action of each field, unharmed.

The lack of reliable tests for an early diagnosis of cancer of the lungs resulted in even the best X-ray specialists not diagnosing the disease correctly in 50 per cent of the cases. Professor Dillon, having elaborated a faithful method of complex diagnosis, achieved an unprecedented success: 90 per cent correct diagnosis.

Instructive results have been achieved by O. Nudolskaya M.D. (Moscow) in studying changes in the organism which are the harbingers of cancer and determine the so-called pre-cancer condition of the womb. In the course of a prolonged period of time (from five to twelve years) she kept forty patients under observation in whom she had determined pre-cancer condition of the neck and body of the womb. Twenty of these women did not take any treatment, with the result that within different periods of time ranging from five months to 6 years 17 of them developed cancer. The other 20 took regular treatment during the pre-cancer condition and in none of them was the development of a malignant tumour noted. For the past five years these women have enjoyed perfect health. This question demands further all-round research, but Nudolskaya's work has proved that active therapy in the pre-cancer condition promises as well as a prophylactic measure against malignant tumours.

Greatly encouraging are the experiments of the two Soviet research workers—Microbiologist Nina Kluyeva, Corresponding Member of the Academy of Medical Sciences of the U.S.S.R., and her husband, Professor of Biology Grigori Roskin who have originated a special biological preparation (named KR after the inventors' initials) for the treatment of cancer. This work is found on Roskin's 15 years of research into the influence of different infections upon cancer tumours. In search of a microbe which might act upon the cells of the malignant tumours, Roskin experimented for a long time on mice in which cancer had been artificially caused.

The microbes of almost all infections to which these animals are subject were used but the desired end was not obtained. The microbes were not strong enough to conquer the cancer.

Thereupon, Roskin proceeded to experiment upon pathogenic simple unicellular organisations. And here he was successful, on testing the action of trypanosoma which cause a mortal disease in man—Chagas' disease. These unicellular parasites infest the blood of a South-American bug, the triatome, which lives in the walls of houses. The trypanosoma do not harm the bug but the bite of the latter is almost always fatal to man.

In infecting mice with trypanosoma Roskin discovered that they also perished from Chagas' disease, but at the same time established what at first seemed a paradoxical fact: rodents suffering from cancer survived longer than the healthy ones. Further research showed the selection in the action of the parasite. The trypanosoma at first enter into combat with the cancer cells and only on having destroyed these, they fall upon the organism of the animal.

The scientist manufactured a preparation from the toxins of the Chagas' microbes; the use of this preparation had the effect that the tumour went down or disappeared completely in 60-70 per cent of the mice treated.

In 1939 Kluyeva took up this work together with her husband. The war interrupted the experiments, but in 1943 they were resumed. After long, painstaking experiments on 13,000 animals a preparation was obtained, the action of which exceeded that of the first 400-fold. It has a beneficial influence on mice suffering from sarcoma and spontaneous cancer of the thoracic glands and proved entirely harmless for the organism of the rodents.

Roskin injected a large dose of this preparation into himself without experiencing any ill results. Repeated experiments on patients confirmed the harmlessness of the preparation.

The main property of this biological remedy is that it resolves the cancer tumour without harming the healthy tissues. Having disintegrated into separate fragments the tumour gives place to the connective tissue.

Clinical tests of the "KR" preparation now being made in Moscow make it possible to hope that it will also have a healing effect on people. However, a final conclusion cannot yet be arrived at as time has to show whether the cells of the malignant tumour disappear entirely or re-appear in the organism.

There is no doubt that the efforts of leading scientists will soon make it possible to discover the secret of the cause of cancer and that effective remedies will be found to combat the disease. However, even the present stage of medical research and the up-to-

date achievements of Soviet and foreign oncologists—surgeons and roentgenologists ensure recovery from cancer if the treatment is taken in time and regularly. That is why the Soviet Government, in a special decision "On Measures of Improving Oncological Aid to the Population" passed last year, instructed the public health authorities to devote prime attention to timely diagnosis and early treatment of cancer.

In the U.S.S.R., where medical aid is rendered to all citizens free of charge, this is quite a feasible task. Here, the very organisation of the health services facilitates timely diagnosis and treatment of cancer. Any Soviet citizen can receive consultation free of charge, and if necessary qualified treatment in the best oncological institutes of the country. Furthermore, a network of medical-prophylactic institutions is rapidly growing in the U.S.S.R., the task of such institutions being to find and register persons suffering from cancer in its early stages—although the patients themselves may be ignorant of the fact. For example, take the oncological centres in the Krasnaya Presnya and October districts of Moscow. The doctors working here examine all patients suffering from stomach trouble and receiving special diets. Such precautions lead to the discovery of early symptoms of malignant tumours. These centres do not limit themselves to verification of chronic cases but organise prophylactic examinations in enterprises and institutions.

The oncological clinics in towns and oncological points in district centres play the leading role in the struggle against cancer. This year the Ministry of public health has done much towards the equipment and staffing of these institutions. In 1946 alone, over 60 new oncological clinics were formed in the country, which are to act as headquarters in organising complex prophylactic and therapeutic measures against malignant tumours.

Experience has shown that the service of oncological clinics is highly effective and efficient. The regional oncological clinic in the city of Ivanovo (although only formed a year ago) has already earned an excellent reputation with the population. It has a hospital, polyclinic, boarding-house for out-of-town patients, pathohistological laboratory and all other necessary apparatus for fruitful prophylactical and healing work. Equally good work is being done by similar clinics in the cities of Kalinin, Ufa and other towns of the U.S.S.R. These clinics also organise special oncological courses for general practitioners, give hygienic instructions to the population, control the work of the oncological centres in the districts, register patients and analyse statistical data.

Outstanding scientists—surgeons, roentgenologists, biochemists, pathophysiologists—give consultations to the doctors working in these clinics and guide their activities.

Cancer patients can receive radical surgical and radium X-ray treatment in all parts of the country.

Public organisations also take part in the struggle against cancer. A particularly important role is played here by the Union of Red Cross and the Red Crescent Societies which number millions of members amongst workers, peasants and intellectuals.

EMPLOYMENT OF EVACUEE DOCTORS

The following letter dated 2-12-47 was received from Hon'ble Rajkumari Amrit Kaur, Health Minister, Govt. of India, by the Hony. General Secy., Indian Medical Association, 23, Hindusthan Buildings, Calcutta:

I am glad to note from your circular letter No. EED|276|18|47-48, dated the 25th November 1947, that the Indian Medical Association is maintaining a list of dcotors evacuated from the Punjab, Sind and Bengal and that the Association will be able to help all Governments in the country with the names of medical men and women they may need for the various medical and public health services in the country.

In the above connection I may state that soon after the disturbances following the partition of the Punjab, I had addressed all the Provincial Health Ministers to utilize the evacuee doctors for the various schemes of medical relief and public health expansion they may have in mind and had informed them that the Director General, Health Services, had prepared a Directory of all such doctors who had approached the Health Ministry here for assistance. I am glad that your association will be helping in the same direction.

REFUGEE DOCTORS AT DELHI

The following resolution was passed at the meeting of refugee doctors held on 2-11-47 at 4 p.m. at the office of the Delhi Medical Association, Daryagunj, Delhi:

We the refugee doctors from the West Pakistan, plate on record our deep sorrow at the untimely tragic death of Romesh Goulatia, the eldest son of Captain R. C. Goulatia, Radiologist, Vice-President, Punjab Medical Council and Vice-President, Indian Medical Association, Punjab Provincial Branch, resulting from the explosion of a mine laid by the authorities in a vacant Muslim house at Mussoorie on the 11th of October, 1947 and convey our heart-felt sympathies to the parents in their sad bereavement and heavy loss.

We are pained to learn that the authorities refused to hand over the dead body of the deceased to the mother of the victim, when demanded by her and did not allow any relative or friend to accompany the body. The deceased was cremated the same night at Rajpur, thirteen miles from Mussoorie, without any relative or friend being allowed to be present. Even the post-mortem examination was not conducted.

We are shocked to know that the mines were laid by the authorities in the vacant Muslim houses and this fact was kept as a closely guarded secret from the public and no notice signalling danger was put up on the premises. This method of protecting vacant Muslim houses is dangerous and should be done away with immediately. We request the U.P. Government that the officers responsible for such an atrocious tragedy may be brought to book.

CURRENT MEDICAL LITERATURE

Sternum and Heart

Depression of the lower end of the sternum is fairly common, for Lang (*Klin. Wschr.*, **7**: 1283, 1928) noted it in 3·5% of children during their first year at school. Sainsbury (*Lancet*, **2**: 615, 1947) records a family in which 6 mild cases occurred in four generations—apparently as a dominant character. The effect of this defect on the position of the heart is apparently not always appreciated, seeing that Evans (*Brit. Heart. J.*, **8**: 162, 1946) recorded 16 examples in adults who were referred for a second opinion because of suspected heart disease. In 5 of these patients rheumatic heart disease had originally been diagnosed, while another 4 had been relegated to grade 3 or 4 by medical recruiting boards. Yet another, a lad of 19, had on the advice of his doctors discontinued work as a medical student and had subsequently been placed in grade 4 by three different medical boards after examinations which included a radiologist's report that the heart was greatly enlarged. When seen by Evans all 16 were found to be healthy, "handicapped only by the restriction imposed on them by a medical examination that had misinterpreted the clinical and radiological signs".

All these patients had depression of the lower sternum, which Evans divides into three types. The first type is the deepest, or "funnel', depression, of which there were 2 examples in Evans's series; the anteroposterior diameters of these patients' chests were 4½ and 5 in. In the second type, the "cup" depression is somewhat shallower; Evans had 8 examples of this kind, with anteroposterior diameters between 5¼ and 5¾ in. In the shallowest or "saucer", depression, of which there were 6 examples, the anteroposterior diameter ranged from 6 to 6¼ in. In every patient with sternal depression the apex-beat was displaced to the left—sometimes beyond the anterior azillary line—and there was a midsystolic murmur best heard at the left edge of the depression. It was presumably the combination of this murmur with the displacement of the apex-beat that had usually led to the erroneous diagnosis of heart disease. The radiological findings were outstanding. In the 2 patients with a funnel depression the heart was displaced bodily to the left, but there was no change in the shape or size of the cardiac outline. In the patients with a cup depression the anterior film showed slight or moderate enlargement of the cardiac outline with prominence of the pulmonary area but the oblique view showed that the cardiac silhouette was normal. With the saucer depression the findings were similar to those with the cup depression, but less pronounced. Other features were the transparency of the cardiac shadow in the anterior view on screening, and in the left oblique, films the displacement backwards of the heart until it overlapped the vertebrae and the constricion of the so-called aortic window.

Evans's explanation is based on his finding that in 16 healthy adults the anterosposterior diameter of the chest averaged 7¾ in. and was never less than 7 in., while the anteroposterior thickness of the heart was 3 in. and the thickness of the sternum, vertebral column, and the soft tissues covering them about 3-¾ in. If the anteroposterior diameter of the chest is less than the sum of these last two figures—i.e., 6-¾ in.—the heart is compressed and thereby has its lateral limits extended. If this compression is gross, as in the funnel depression, the whole heart is pushed over to the left, but in the less severe cases the heart is compressed in the "sternospinal vice', giving a superficial radiological impression of enlargement. These results illustrate once again how necessary is radiology in the routine examination of the cardiovascular system. *Lancet*, **2**: 625, 1947.

Diagnostic Management of Patients with Jaundice

Giansiracusa and Althausen (*J. A. M. A.*, **134**: 589, 1947) write that in many patients with jaundice the correct diagnosis can be made from the history and physical examination alone. For example, a middle-aged patient in whom, after a prolonged period of malaise and nausea, there develops jaundice with decided pain in the right upper quadrant referred to the back, pruritus and low grade fever may be suffering from either obstructive or parenchymatous jaundice. In such cases, an additional history of alcoholism would point to cirrhosis of the liver or hepatitis; male sex with definite progressive loss of weight would strongly suggest carcinoma of the pancreas; a history of cholecystic disease, of biliary colic or of chills and fever would favor a diagnosis of stone in the common bile duct. A physical examination may reveal a palpable gallbladder, which would suggest carcinoma of the pancreas, or disclose one or more of the following signs; extremely large liver, ascites, collateral subcutaneous circulation, spider angiomas or splenomegaly, which would point to parenchymatous jaundice and probably cirrhosis of the liver. However, in many instances the history and physical examination do not yield information of a decisive nature. The laboratory study may then answer the crucial question whether the jaundice is due to extrahepatic block and surgical intervention is necessary or whether it is due to parenchymatous disease of the liver and medical treatment alone is indicated. The gastrointestinal series of tests may furnish presumptive evidence of carcinoma of the pancreas or of hepatic cirrhosis. A low serum albumin level with a high serum globulin determination favors parenchymatous jaundice. However, in our experience final recourse is usually to liver function tests. Here it must be remembered that liver function tests involving the ability of the liver to excrete certain substances, such as dyes or bilirubin, are useless in patients with jaundice. It is also well to bear in mind that the most sensitive liver function tests are not always the best for a given purpose. For example, the high sensitivity of the hippuric acid test makes it useless for the differential diagnosis of jaundice. The most decisive factor in differentiation between obstructive and parenchymatous jaundice is the ability of the liver to metabolise galactose and to produce prothrombin following an injection of vitamin K. If these functions of the liver are not impaired, or are impaired only slightly, the case is in the domain of the surgeon. If they are greatly impaired the case is almost always strictly a medical problem. If the results are inconclusive or conflicting, supportive treatment and serial determinations of bilirubinemia are indicated for a period of two months from the onset of jaundice. During the period the large majority of patients with parenchymatous disease of the liver are either on the way to recovery or have died from acute yellow atrophy of the liver. Those remaining unimproved, with few exceptions, have obstructive jaundice and should be subjected to exploratory laparotomy.

Bronchial Spasm in Cardiac Asthma

Plotz (*Ann. Int. Med.*, **26**: 521, 1947) writes that bronchial spasm is an important element in certain types of heart failure.

Cardiac asthma may occur with asthmatic wheezing and without basal rales. Such cases are indistinguishable by means of physical signs from bronchial allergic asthma and may, as in the case of the later, be improved by the use of adrenalin.

In normal individuals, the administration of adrenalin does not increase the vital capacity.

In patients with cardiac failure without basal rales but with wheezing respiration, the administration of adrenalin increases the vital capacity sharply.

The vital capacity is not increased by adrenalin in patients with basal rales.

The expiratory pressure is sharply decreased in patients with pulmonary congestion or wheezing respiration and the expiratory time is prolonged.

Diabetic Neuropathy

Involvement of the nervous system is one of the commoner complications of diabetes mellitus. In the days before insulin Kraus (*Arch. Neur. Psychiat*, **7**: 202, 1922) reported abnormal tendonjerks in 40% of his diabetic patients and impairment of vibration sense in the legs in a third of them, while in 426 patients studied by Broch and Klovstad (*Acta. med scand.*, **127**: 514, 1947) some of the jerks were absent in 48·7%. The exact types of neurological involvement, the pathology, and the relationship between the metabolic disturbance and the neurological abnormalities are still doubtful. Jordan (*Anch. Intro. Med.*, **57**: 307, 1936) divided the neurological complications into four groups (1) hyperglycæmic, in which tenderness of nerve and muscle, usually without objective signs, is found in patients with a high blood sugar and responds well to treatment of the diabetes: (2) circulatory, in which there are signs of arteriosclerosis in addition to neurological involvement; (3) degenerative, in which impaired tendon-jerks and poor pupillary reaction to light occur without severe symptoms; and (4) neuritic, where there are relatively serious symptoms and abnormal signs in the legs coming on fairly acutely and gradually improving in the course of weeks or months. Broch and Klovstad (loc. cit.) found that their cases fell into somewhat similar groups though they have avoided the aetiological terms which Jordan used.

The main symptom of diabetic neuropathy is pain in the legs, which may be very severe, especially at night, and is accompanied by considerable tenderness of the muscles. In the more advanced cases there is wasting and weakness of muscles and sometimes foot-drop, absent ankle-jerks and knee-jerks, and impaired vibration sense; position-sense in the feet may be lost, resulting in ataxia. Sometimes there is cutaneous sensory impairment, which may be dissociated in type, resembling that found in syringomyelia, and may be in the distribution of spinal root segments rather than in the peripheral nerve areas commonly affected in other types of peripheral neuritis. Of 100 cases of diabetes with neurological signs Rudy and Epstein (*J. Clin. Endocrinol.*, **5**: 92, 1945) noted evidence of spinal-cord involvement in 26, but they did not give detail of these cases; in 1904 Williamson (*Brit. M. J.*, **1**: 1222, 1904) demonstrated histological signs of degeneration in the posterior columns of a diabetic aged 25 who died in coma and was known to have had absent knee and ankle jerks. Disturbance of bladder function similar to that found in tabes dorsalis may be associated with the peripheral neuropathy (in 10 of 125 cases reported by Rundles *Medicine*, **24**: 111, 1945), and in rare cases this may occur without other clinical evidence of neuropathy.

It seems certain that the neuropathy is not the direct result of hyperglycaemia or ketosis; it may be seen in patients whose diabetes is well controlled by diet and insulin, whereas other patients who were free of neurological signs before treatment have developed symptoms and signs shortly after treatment has been started. Inevitably lack of vitamin B has been suggested as the cause, but Needlse (*Arch. Neurs. Psychiat.*, **41**: 1222, 1939) and also Fein *et al.*, (*J. A. M. A.*, **115**: 1923, 1946) who from this point of view investigated the diets given to their patients, found that neuropathy could occur when the intake of B_1 was well above normal requirements. Treatment with large doses of vitamin B_1 does not notably affect the rate of recovery of these patients, and if the vitamin is in any way connected with the neuropathy it must be in relation to some subtle upset of carbohydrate metabolism. Some workers think there is an important relationship between peripheral vascular disease and neuropathy, and Broch and Klovastad (*loc. cit.*) suggest that the neurological involvement is in some unexplained way the consequence of circulatory disturbance; but only about 10% of their neuritis cases had impalpable pedal pulses, incipient gangrene, or ulceration, while a further 12·5% had other evidence of vascular disease, such as cerebral arteriosclerosis, angina pectoris, or retinal vascular changes. Of Rundles's 125 cases only 25 had clinical evidence of peripheral vascular disease.

At present, therefore, the pathogeny of diabetic neuropathy remains obscure, which makes rational treatment difficult, other than effective control of the diabetes. It is usual for slow improvement to take place over a period of weeks or months, but in some patients pains in the calves and ataxia persist and the knee and ankle jerks are permanently impaired.—*Lancet*, **2**: 626, 1947.

Dicoumarol

The success of dicoumarol in the treatment of phlebothrombosis and thrombophlebitis has raised the question of its possible value in other thrombotic conditions, especially coronary thrombosis. Recent reports are favourable, and the fear that the drug might endanger life by causing or increasing subintimal coronary haemorrhage has not been substantiated. Results are difficult to judge in any given instance, but may be assessed from statistics. In Wright's (*Am. Heart J.*, **32**: 20 1946) series of 76 cases the mortality rate for the treated illness was 25% in the group of 42 selected because of repeated coronary thrombosis of the occurrence of emboli, and 12% in the uncomplicated group of 33 cases. Peters, Guyther, and Brambel (*J. A. M. A.*, **130**: 398, 1946) found a mortality rate of 4% in 50 cases of acute myocardial infarction treated with dicoumarol, compared with 20% in 60 controls not so treated. Nichol and Page (*Florida M. A. J.*, **32**: 365, 1946) reported similar results. These figures are said to compare favourably with those of published controls which have been quoted by Master *et al.* (*Am. Heart J.*, **12**: 549, 1936) as 24% to 35% for the first attack and 38% to 53% for all attacks. On the other hand they are little better than those obtained with Master's 800—calorie diet—8% and 16·5% respectively. Thus, although dicoumarol appears to be lifesaving, so may be other simpler measures. In stressing the low mortality rate of 12% in the group of 33 dicoumarol-treated uncomplicated cases in their first or second attack, Wright put the anticipated death

rate at 20% to 30%. This is too high. Conner (*Lancet*, **2**:83, 1930 and *Am. Heart J.*, **5**:705, 1936), for example, found the mortality was 16·2% in his unselected series of 287 cases in the first attack.

Prevention of thrombosis elsewhere and of pulmonary embolism, as noted by Wright, (*N. Y. Et. J. Med.*, **46**:1819, 1946) may be assumed. This alone provides adequate ground for the use of dicoumarol in coronary thrombosis, for Eppinger and Kennedy (*Am. J. Med. Sc.*, **195**:194, 1938) found that pulmonary embolism was the direct cause of death in 6·5% of 200 fatal cases of coronary thrombosis and was an important contributory factor in another 17·5%. Peters *et al.* observed clinical evidence of embolism in only 2% of their 50 treated cases, compared with an incidence of 16% in 60 controls. Dicoumarol therapy must be controlled by daily estimations of prothrombin time and should continue for at least a month. The prothrombin time is kept at about one and a half times the normal value by means of daily doses of 100 to 300 mg. of dicoumarol. If the prothrombin time exceeds one and a half times the normal the drug should be temporarily discontinued. Haemorrhagic manifestations include haematuria and melaena, and may be treated with 50 to 100 mg. of vitamin K intravenously or with blood transfusion. —*Brit. M. J.*, **2**:662, 1947.

Basic Factors of Nutrition in Old Age

Freeman (*Geriatrics*, **2**:41, 1947 Ref. *Rev. Gastroenterol.*, **14**:646, 1947) writes that heretofore, there was more concern for the dietary problems of youth, where there is greater physiological elasticity to deal with indiscretions. Today there should be greater emphasis placed on the nutritional problems of the aged, where a deficiency may upset the entire physiologic equilibrium.

Good dental care and replacements influence proper desire and ability to eat, resulting in better eating habits. Impairment in strength of the buccal muscles can be compensated for by changes in type of food; also progressive atrophy of lingual mucosa may influence acuity of taste.

The G.I. tract undergoes two main changes—reduction of secretory units in the stomach and loss of muscular tone. More important than the change in the smooth muscle tone, is the loss of tone of the voluntary abdominal muscles, resulting in a relaxed abdominal wall with visceroptosis, ventral herniation, and sagging perineal supports. The small intestines and colon undergo mucosal atrophy, muscular thinning and loss of muscle tone, together with intestinal vascular sclerosis, and degeneration of the mesenteric vessels, causing impairment of venous return. These cause hemorrhoids and prominent veins on the abdomen and legs. Added to this are the degenerative neural changes of the G.I. tract. Finally there are the cellular changes in an old pancreas and liver, impairing their functional capacity.

There is not much difference in emptying time of the stomach of young and old—2·08 hours in young and 1·94 hours in aged. In the saliva the young showed 10 units of ptyaline, the aged 3 units. In young, after stimulation—14 c.c. saliva and specific gravity 1·004. In the aged only 5·8 c.c. and specific gravity 1·009. Hence starch digestion in the mouth of the aged is greatly impaired. As for gastric secretion, achlorhydria has been reported in as high as 65 per cent of cases, with a failure to respond to histamine in 28 per cent. There is a steady decline after 60 in pepsin, as well as trypsin. Lipase is lower both in fasting and stimulated stomach after 60. Hence it will be seen that the factor of time and load must be considered. To obtain a comparable degree of digestion these older people must be given a smaller amount to work upon and allow a longer period for digestion.

In persons over 60 there is an abnormal results in liver function tests, as shown by Cephalin flocculation, Bromsulfalein and Serum Cholesterol, all of which are impaired. Galactose tolerance test showed a reduction in tolerance of glucose, suggesting a diabetic curve in 50 per cent of subjects over 60 years, leading to the conclusion that carbohydrate metabolism, as measured by blood sugar curves is definitely impaired in old age.

Blood cholesterol in persons over 60 was high—60 per cent over 200 mg. and 14 per cent over 300 mg. being slightly higher in females than males. This shows a difficulty in utilization of sterols, probably due to pathological processes rather than impaired utilization. Calcium, phosphorous and phosphatase balance showed no changes. Where the daily intake of calcium fell below 520 mg. and of the phosphorus below 1,200 mg. there may arise localized tetanic manifestations and leg-cramps especially at night, when excretion is higher. Uric acid, NPN, and renal function tests are not impaired in old age. R.B.C., W.B.C. and hæmoglobin showed only slight changes if any with advancing old age.

The older person requires a diet high in proteins, moderate in carbohydrates, and low in fats, with the vitamins maintained higher than average.

Improvement in Kidney Function Following Treatment for Cirrhosis of the Liver

Morrison (*Rev. Gastroenterol.*, **14**:533, 1947) writes that the association of disorders of kidney function in the 39 cases with cirrhosis of the liver is described.

A comparative analysis is presented of the changes in urinary symptoms albuminuria, cylindruria, excess of erythrocytes and leucocytes in the urine of these patients, before and after treatment.

In this series of 39 patients with cirrhosis of the liver, marked improvement frequently occurred in urinary symptoms and abnormalities in sediment after treatment. This improvement took place after an intensive combined therapy for hepatic cirrhosis, described herein, was employed.

(*a*) Degenerative tubular, hemorrhagic and nephrotic changes in the kidney produced and corrected experimentally are reviewed.

(*b*) The experimental basis for a therapeutic approach to the treatment of nephrosis is discussed.

A modified plan of treatment for nephrosis is suggested, based on experimental studies on choline deficient diets in animals.

Response in Chronic Nephtosis to Treatment for Cirrhosis of the Liver

Morrison (*Rev. Gastroenterol.*, **14**:603, 1947) writes that a case of chronic or lipoid nephrosis associated with multiple myeloma was treated by a parenteral liver extract therapy, high protein diet and supplements of vitamin B-complex.

The response of the renal function in this case was sufficiently encouraging over a four year period to suggest further trial of this treatment in chronic or lipoid nephrosis.

Improvement in renal function during treatment of cirrhosis of the liver was described first in a report contributory to this paper and appeared to justify a trial of the therapy herein recorded.

Experimental studies suggesting a resemblance of cirrhosis of the liver and chronic or lipoid nephrosis as disorders in protein metabolism are discussed.

The experimental and clinical basis for treatment of chronic or lipoid nephrosis by the new therapeutic regime of hepatic cirrhosis is stated.

Action of Prostigmine on Paralysis Following Cetebral Trauma

Grashchenkov (*Am. J. Soviet Med.*, **4**:3, 1947) The synthetic drug Prostigmine is a member of the atropine-antagonist group, almost identical with the natural alkaloid eserine physostigmine. Prostigmine was injected one or more times in nearly 300 cases of cerebral trauma with paralysis. In most cases there was immediate and lasting motor and sensory improvement; in some it was striking, and in only 6 per cent of the cases was no improvement observed. The author discusses the possible mechanisms underlying this therapeutic effect, and concludes that prostigmine corrects functional asynapsis—the functional elimination of structurally intact nervous elements exposed to the toxic autolytic products of adjacent destroyed tissue. It is presumed that prostigmine exerts a direct beneficial effect on the altered enzymatic processes in these poisoned tissues, as well as an indirect effect via the vegetative nervous system.

Protein Hydrolysate in Peptic Ulcers

Rossien (*Rev. Gastroenterol.*, **14**:623, 1947) writes that since an auxiliary study revealed that protein hydrolysate had a secretagogue effect at the end of about one hour, it is advisable to supplement the medicament with a non-constipating antacid like nonreactive aluminum hydroxide gel one hour after the ingestion of protein hydrolysate.

The amino acid mixture has an excellent effect on constipation and is recommended for that purpose in forty-five gram doses thrice daily.

The generally conditions are markedly improved and the patients manifest more confidence than before the onset of treatment.

The symptoms of nausea, vomiting, belching, heart-burn, hunger-pain, abdominal pain and constipation were reduced by about eighty per cent in the cases studied in this series.

Untoward effects like diarrhea, belching and heart-burn disappear after about two weeks of treatment.

X-ray evidence does not reveal that this method of treatment gives better results than methods previously employed.

Protein hydrolysate is a worthy adjunct in the treatment of peptic ulcers providing a non-constipating antacid like nonreactive aluminum hydroxide gel is used as a supplement one hour later. However, protein hydrolysate is definitely not a cure for ulcers.

Early Treatment of Poliomyelitis

Seddon (*Brit. M. J.*, **2**:319, 1947) writes that the essential features in the early treatment of weak and paralysed muscles in poliomyelitis are as follows:

Early determination of the extent and degree of muscle weakness. The extent of the paralysis should always be ascertained at about one week after its onset and then at intervals of two weeks until two months after the onset. Observations at intervals of a month will then be sufficient, and after six months at intervals of two months.

Maintenance of the paralysed part in what one may call a sensible position—the term "physiological position" is hardly apposite-should be undertaken from the first. This is the only reason for the application of splints.

In order to prevent stiffness of joints and contracture of muscles the affected part should be put through a full range of movement at least once a day, this treatment being started when pain has subsided or 10 to 14 days after the onset of paralysis, whichever period is the shorter.

If pain—either muscle tenderness, pain on stretching a muscle, or true muscle spasm-persists beyond this time, or if it is very severe in the early stages of the disease, relief may sometimes be obtained by the application of heat; and it will then be considerably easier to carry out the movements that are so essential for the maintenance of the limb in a healthy condition.

Treatment of Symphoblastic Leukaemia with Crude Myelokentric Acid

Miller and others (*J. Haematol.*, **2**:15-39, 1947, Ref. *Indian I. M. Sc.*, **1**:292, 1947) have described 8 cases of blastic lympoid leukæmia treated with myelokentric acid in crude form with beneficial results both hæmatological and pathological and as far as longevity of life is concerned. Myelokentric or lymphokentric acids are found in the urine of patients suffering from acute or chronic myeloid leukæmia, chronic lymphoid leukæmia monocytic leukæmia and Hodgkin's disease. These two acids are chemically inter-convertible. According to the authors these substances are of fundamental importance in the abnormal processes of blood cell production in leukæmia. The authors contend that leukæmias represent a group of metabolic disorders in which the various types are not well separated on physiologic basis. These metabolic disorders result in imbalances in the normal relationship of the lymphoid and myeloid systems. The authors suggest that the maturation of myeloid cells is brought about by the action of lymphokentric acid which inhibits the proliferation of myeloid cells and hence allows them to mature. In leukæmias there is an excess of one or the other acid bringing about excessive proliferation and maturation of the opposite group of cells. Its deficiency causes failure of maturation. They explain the occurrence of monocytic leukæmia on the basis of excessive excretions of both myelokentric and lymphokentric acids resulting in monocytic proliferation accompanied by some pleomorphism and either much or little maturation of the cells involved.

In the present paper out of 12 cases of lymphoblastic leukæmia 8 have been given extracts of urine or faeces from patients with chronic myeloid leukæmia. The other four cases were kept as controls. As a result of treatment there was a trend toward normal blood levels in each of the treated cases.

The length of life of all cases was—longer by several months than the treated ones. These partial remissions have been considered by the authors to be due to treatment with myelokentric acid. The histopathologic changes in the various organs of the treated cases were in keeping with the clinical picture. The necropsy material lends further weight to the belief that the remissions were induced by this treatment.

Medical Treatment of Hypertension

East (*Practitioner* **158**:467, 1947) writes that medical treatment of hyertension is only palliative. The medical practitioner must not stress too much on the level of the blood pressure. The actual figures should not be given to the patient. To allay anxiety is of the greatest importance. All pursuits and activities of the patient should be assessed to see which can be omitted or reduced. Quiet sedentary occupation is often beneficial. Heavy physical work is best changed for something less strenuous.

Patient should be advised to go to bed early. The week-end should be restful. Tiring excursions do more harm than good. A day a week should be spent in bed, or at any rate part of a day. Long and restful holidays are helpful. A fifty per cent increase in rest and a corresponding reduction in activity should be aimed at.

As regards diet, moderation is most important. If the patient is obese a reduction in weight will benefit his health. As high blood pressure overloads the heart, reduction in weight will reduce its work to some extent. Coffee and tea do no harm. Red meat and salt may be given in moderation.

In moderation, alcohol does no harm. It is best taken with food. Whisky and soda, light wine or beer are probably best. It causes a mild vasodilation. As regards tobacco, moderation should be strict. If vasospasm is present, smoking should better be given up. In some persons nicotine definitely causes a rise in blood pressure. Moderation in some is excess in others.

Moderate exercise is good; but should stop short of causing fatigue. Walking, short of breathlessness, is the exercise of choice. Warm bath is good. Exposure to cold water and swimming should be forbidden.

Headache—In mild cases, rest and administration of mild analgesics will help. In very severe cases, relief may be obtained by inntravenous injection of magnesium sulfate (two grammes in a ten per cent solution, 20 c.c.). Venesection may be helpful. In late and intractable cases, lumbar puncture is indicated. Papilledema is its indication.

Medicinal Treatment—Sedatives help physical rest If the patient sleeps badly, barbiturates are especially indicated. Phenobarbitone, ¼ gr. thrice daily, and an extra dose at night if a prolonged effect is needed. Sodium amytal, 3 gr. is useful. Chloral or chloral and bromide at night suits some patients. Where basal metabolic rate is high, a course of methyl thiouracil, 0·2 gm. (3 gr.), twice or thrice daily for a week or ten days is indicated. Vasodilators are generally disappointing Sodium nitrite, ½ to 1½ gr. is best for the purpose, but it may aggravate headache. Thiocyanate It reduces arterial pressure, but its effect is temporary. The dose is 6 to 9 gr. a day to begin with. After five or six days the dose can be halved. As little as three grains a day suffice. The toxic level is near the therapeutic. So estimation of the level in blood is essential. The toxic effects are fatgue, headache, mental confusion and giddiness. Rashes and jaundice may occur. The pressure rises again when the drug is discontinued. Old age and arteriosclerosis are contra-indication.

Oral Penicillin in Chronic Ulcerative Colitis

Streicher (*J.A.M.A.*, **134**:339, 1947) employed penicillin alone and in combination with phthalylsulphathiazole in chronic ulcerative colitis.

Primarily penicillin exerts its power against gram positive bacteria but at times against gram negative organisms also. It was administered orally to 45 patients in doses varying from 100,000 to 300,000 units daily together with phthalylsulplathiazole. With this combination the B. Coli., the staphylococcus and streptococcus counts were markedly decreased after an initial rise. The penicillin blood levels ranged from 0·4 to 100 units per cc.

Forty-five patients were treated with oral penicillin in doses of 100,000 to 300,000 units. All showed improvement. Cramps subsided and the number of stools, blood and mucus were reduced. No toxic symptoms were noted even after 4 weeks of treatment. When phthalylsuphathiazole was added to the penicillin, there was a disappearance of the ordor in the stools.

Psychological Aspects of Seborrhoeic Dermatitis

Wittkower (*Brit. J. Dermat & Syph.*, **59**:281, 1947) writes that seborrhoeic patients what is commonly called an obsessional character. But, like many other psychologists, I believe that there are many sheds of obsessional characters with varying emphasis on any one feature. Whereas the effort syndrome patient is predominantly concerned with problems of honour, mortality and religiosity; the peptic ulcer patient preoccupied with bread and butter problems; the patient suffering from colitis, with cleanliness and tidiness, difficulties in social contacts are most prominent features in seborrhoeics. It looks as if the seborrhoeic patient does not only feel ostracized because of his skin affection, but that he is prone to develop his skin affection because he feels-and has always felt-ostracized. The malady disturbs the social relationships of the patient still further, and relegates him in many cases to the position of a pariah. Though outwardly protesting against this state of affairs and actually suffering through it, the seborrhoeic may inwardly accept the infliction as being well deserved.

However, without underrating the importance of emotional factors in the aetiology of seborrhoeic dermatitis, there is a danger in overrating them. It still remains to be explained why only two-thirds of the patients studied conformed to the personality type described, and why individuals of this type under the impact of disturbing events to which they had been sensitized develop this particular skin disorder and not a nervous breakdown, or any other psychosomatic affection. It must be assumed that, in the aetiology of seborrhoeic dermatitis, multiple factors are at play, and that a skin predisposition, possibly on a constitutional basis or perhaps as a result of previous skin infections, prepares the soil for its eventual outbreak.

The practical implications of the findings are obvious. In many cases of seborrhoeic dermatitis it seems to be safer to assess the prognosis of further military service and of an early

return to duty or to civilian work on the basis of personality and conflict, than on the basis of the presenting dermatological symptoms. Unless supplemented by adequate psychological care, local treatment alone is unlikely to safeguard against relapses. Welfare problems have to be dealt with in some cases. Choice of congenial employment is also essential in persons so sensitive to injuries to their pride.

Sensitization by Topical Application of Sulphonamides

Sulzberger and others (*J. Allergy*, **18**:92, 1947) write that in experiments on human volunteers in whom standard third degree burns were produced on the volar aspect of the forearms, measured amounts of a sulphonamide cream were used in treatment of the lesions. The men were divided into four groups, one group treated with 5 per cent sulphanilamide cream, one with 5 per cent sulphathiazole cream and one with 5 per cent sulphadiazine cream. Many of the men volunteered for a second or third experiment; in these cases the same cream was used for all courses of treatment. Before the application of the suphonamide cream, acid debridement was used to remove the slough. When debridement was complete, daily dressing of the wound with the sulphonamide cream was done. About 8 cc. of the cream was applied daily to each lesion. In a total of 254 volunteers treated with the four sulphonamide creams, the incidence of dermatitis was 19 per cent. But there was considerable variation in the incidence of dermatitis in the different groups. Over one-half (57 per cent) of the men treated with sodium sulphadiazine, and nearly one-fourth (22 per cent) of the men treated with sulphathiazole cream developed dermatitis, while in the group treated with sulphanilamide cream, the incidence of dermatitis was 7 per cent, and in the group treated with sulphadiazine cream, 5 per cent. It is evident that the relative incidence of sensitization in these groups corresponded to the relative water-solubility of the sulphonamide employed, the most soluble compound giving the highest incidence of dermatitis. The degree of skin injury produced by the acid debridement also had some effect on the incidence of dermatitis. In the case of men who submitted to more than one experiment, it was found that if a man developed a sensitization dermatitis in one experiment, he developed a dermatitis when treated again with sulphonamide cream.

Patch tests were made with the sulphonamide cream selected for treatment in all subjects before treatment. Patch tests were also made on the completion of treatment and repeated at intervals of three to four weeks as long as the men were under observation. Of the 49 subjects who had differing degrees of sensitization dermatitis, 31 per cent had positive patch tests, but all the men who had severe dermatitis had positive patch tests. Ten per cent of those with positive patch tests were positive for only the sulphonamide used in treatment; the others showed some degree of cross reaction to other sulphonamide compounds. Eight men who had not developed a clinical dermatitis gave a positive patch test after treatment; in 4 of these the patch tests were positive to sulphonamides that had not been used in the treatment. There was no evidence that previous treatment with a sulphonamide given by mouth influenced the occurrence of cross sensitization. Of 12 men who developed clinical dermatitis after tropical application of a sulphonamide cream and were subsequently given sulphadiazine by mouth (6 Gm.), 8 developed clinical dermatitis and one general symptoms but no dermatitis after this oral dose. In 31 men who had had repeated topical applications of a sulphonamide cream but did not develop dermatitis, the same oral dose of sulphadiazine caused general symptoms but no dermatitis in 5 cases. None of 13 controls who had no previous exposure to sulphonamides developed symptoms after this oral dose of sulphadiazine.

Cerebral Amoebiasis Treated with Emetine

Collard and Kendall (*Lancet*, **2**:17, 1947) reports a case which is of considerable interest, because it appears to be the first case on record of cerebral amœbiasis followed by recovery. The diagnosis in this case was based on the history of diarrhoea in Africa, the appearance of a hepatic rub and tenderness and the dramatic response to emetine. The combination was thought to be a sufficient basis for the diagnosis, in spite of the negative results of stool examinations.

Amœbic abscess of the brain has been recognised for many years, having been described by Morehead in 1856. Amœbœ were first demonstrated in the abscess cavities by Kartulis in 1904. Legrand (1912) described a case, and Armitage (1919) collected forty-eight cases from the literature. None of the authors reported recoveries in any of their cases. Neither craniotomy and evacuation of the abscess cavity nor treatment with emetine met with any success.

The present case appears to have been treated much earlier in the development of his cerebral lesion than were those who died. He had perhaps only foci of amœbic encephalitis which never proceeded to abscess formation. "The process", according to Armitage, "originates from small areas of true amœbic meningitis, the infection raaches the depths of the nerve tissue". The present case was presumably cured before any significant invasion of the brain tissue has taken place. The transitory cranial nerve palsies must be regarded as an indication of a basal amebic meningitis.

Amoebic Granuloma of the Cecum

Zucker (*Rev. Gastroenterol*, **14**:609, 1947) writes that chronic amebiasis is an increasing disease in the temperate climate. It is now estimated to be present in 5—10 per cent of the population. While the stenosing "amebic granuloma" is rare, earlier stages in its pathogenesis are not infrequent. The syndrome of amebic involvement of the cecum deserves more attention by the clinician. Its proper recognition is of great practical importance because adequate treatment and the cure of the patient depends on it. Intensive antiamebic treatment with emetine, iodine and arsenicals can effect a complete disappearance of the filling defect and palpable mass. Even a stenosing mass producing complete intestinal obstruction may vanish under treatment. Resection of an involved cecum may lead to death from peritonitis unless antiamebic treatment is given preoperatively or as soon postoperatively as the condition is recognized.

Precursors of Gastric Carcinoma

Schindler (*Geriatrics.*, **2**:75, 1947) Ref. *Rev. Gastroenterol.*, **14**:649, 1947) writes that gastric carcinoma may be anteceded by one of three of the following diseases:

Benign Ulcer—The question of its turning malignant is still in the pros. and con stage. Usually they do not turn malignant. Since 3-4 per cent of all adults die of carcinoma

of the stomach, one must expect 3-4 per cent of all ulcer patients to die of carcinoma. However the carcinoma may not develop in the ulcer area, it may originate in another part of the stomach. The author believes that benign ulcers do not predispose to carcinoma as the ulcer-bearing stomach possesses a protective power against carcinoma.

Benign adenoma—Polyps of the stomach are not rare, they may be single or multiple, small or large. In the author's opinion the great majority of benign adenomas remain benign and never invade the surrounding tissues. Extripation of the small ones are difficult and necessitate an abdominal operation and are best left alone. The larger ones, 2 cm. and over should be extirpated. If the small one start to grow, they should be removed immediately.

Atrophic gastritis—This condition is not well recognized and its clinical significance contested. Some authors say it is symptomless, others that it gives rise to a variety of symptoms, such as local pain, pressure, fullness and at times nausea and vomiting, general weakness, fatigue, anorexia and loss of weight. Also parastheseas, numbness, tingling and sore tongue, suggesting a pernicious anema. The anatomic picture is that a P.A. or a gastric carinoma. It is a disease of advanced age, although it may exist in earlier life; it is highest in the cancer age. This gives rise to the question deos the carcinoma produce the gastritis, or does the gastritis produce the carcinoma? Or are both due to a common cause? In gastroscopic studies of 1,814 cases without atrophic gastritis and 353 with atrophic gastritis, benign adenomata was seven times more frequent in the group that had gastritis. Thus it is obious that atrophic gastritis precedes tumor formation. In P. A. where atrophic gastritis is most common, gastric tumors occur much more frequently.

Numerous investigators have shown that gastric carcinoma is more prevalent in those cases with a history of chronic atrophic gastritis. The only sure way of determining atrophic gastritis is by gastroscopy. In histamine proved anacidity, repeated examination should be made both gastroscopically and by X-ray, to rule out atrophic gastritis and the possibility of gastric carcinoma.

Review of 174 cases of Cancer with Necropsies

Joffe and Wells (*Minnesota Med.*, **30**:735, 1947) give in the following lines the summary of their observations:

Approximately 1 per cent of all admissions to this hospital over a five-year period resulted in death by cancer.

Over one-sixth of the necropsies performed over a five-year period were diagnosed cancer.

The sex percentage was 58 per cent men and 41·9 per cent women

With reference to age groups, out of 174 cases, 12 per cent occurred in the age group forty-one to fifty, 27 per cent in fifty-one to sixty, 21·8 per cent in sixty-one to seventy, and 25 per cent in seventy-one to eighty. A total of 150 out of 174 cases (86 per cent) occurred in the age group between forty-one to eighty.

In terms of organs primarily affected, the digestive tract accounted for a total of 45·9 per cent; the reproductive system, 17·0 per cent; the genito-urinary system, 14·9 per cent; the lymphatic system and bone narrow, 10·9 per cent; and the respiratory system 7·4 per cent, of which 5·6 per cent occurred in the bronchi.

The sex specific cancer mortality with reference to primary sites was generally higher in males, except in the reproductive system.

The average mean age with reference to organs varied from 49·6 years with cancer of the kidney to 71·6 years with cancer of the prostate.

The total average time intervale in months from the onset of symptoms to death was 5·98 with cancer of the digestive tract 5·6 in the bronchi; 10·8 in the lmphatic system and bone marrow; 16·4 in the genito-urinary system; and 29·4 in the reproductive system.

The systemic effect of emaciation occurred in a total of sixty-seven (38·5 per cent) of the cases, in which group forty-four (65·6 per cent) occurred with malignancies of the digestive tract.

Approximately one-half of the cases of moderate anemia and one-third of those with severe anemia occurred with malignancies of the digestive tract.

Albuminuria occurred in forty-five (25·8 per cent) of the cases.

The five outstanding symptoms of cancer of the stomach were: anorexia in 88 per cent chronic dyspepsia in 77·7 per cent, nausea in 70 per cent, loss of weight in 51·8 per cent, and vomiting in 47·7 per cent.

Gastric analysis was done only in nine out of twenty-seven cases of cancer of the stomach, and all showed an achlorhydria.

In our series, 61 per cent of cancer involving the colon occurred in the sigmoid and rectum.

Anemia which is usually a prominent symptom a cancer of the right half of the colon occurred in 80 per cent of our cases in this half of the colon.

Colicky abdominal pain which is usually a prominent symptom of cancer of the left half of the colon occurred in 52·3 per cent of the cases.

In our series, only seven out of eighteen cases of cancer of the prostate had acid phosphatase determination, four of which showed elevated levels and evidence of bony metastases by X-ray.

A single lump in the breast was the outstanding finding in eleven out of twelve case of cancer of the breast.

Irregular bleeding occurred in 71·4 per cent of cancer of the cervix and postmenopausal bleeding in 80 per cent of cancer of the fundus of the uterus.

Examination of pleural fluid for cancer cells was done on all cases of bronchogenic carcinoma with pleural effusion, and was positive in four (66·6 per cent) of the cases.

Penicillin in Acute Suppurations of the Lung

Alcaron (*Dis. Chest*, **13**:211, 1947) from this short series of cases tried to draw some suggestions concerning the treatment of pulmonary suppurations by means of penicillin.

The use of penicillin should be continued for as long as necessary to obtain a definite improvement clinically as well as hæmatologically. This protracted use of penicillin must go beyond the average for other acute diseases before it is considered a failure.

The improvement as ascertained by roentgen rays is much less rapid than the clinical and hæmatological ones. Under

penicillin treatment the cavities become sterile, we believe, before they close, as far as the combined clinical, hæmatological and X-ray films can show.

When an immediate response to the intramuscular penicillin is not seen, the use of the bronchoscopic approach to the purulent focus is imperative.

In these cases, as described, credit should not be given to bronchoscopy alone but to the combined use of penicillin intramuscularly and bronchoscopically. Earlier experience with the bronchoscope alone failed to give as good results as the combination of these two methods.

Perforation of the Gall-bladder

Hyman and Steigman (*Am. J. Digest, Dis.*, **4**:221, 1947) writes that the incidence of perforated gall bladders is higher than usually assumed, varying from 13—25 per cent of acute gall bladder conditions.

Chronic cholecystitis and choleilithiasis are underlying factors in the production of gangrene and subsequent perforation of the gall bladder.

Gall bladder perforations occur most commonly in persons aged 50 and over.

Males are affected more frequently than is generally thought; 38 per cent in our series.

A very small per cent of perforation are diagnosed correctly or early enough to save the patient's life. None of our series was correctly diagnosed prior to autopsy.

The reasons for delay in surgery in definite gall bladder disease are first, procrastination by patients and acquiescence to this by their physicians, and secondly, uncertainty in the mids of some physicians as to the indications for gall bladder surgery.

The indications for gall bladder surgery are outlined.

Stones in the gall bladder are an indication for surgery, regardless of whether symptoms are present or absent. Another indication for surgery is non-visualization of the gall bladder in the presence of colic, and absence of jaundice. One should not expect to see gall stones on every X-ray film before advising operation for biliary tract disease. Some gall stones are soft and do not give a calcific shadow. These appear only as radiolucent shadows within a gall bladder which is at least partially outlined by the ingested dye. If for one or more reasons, dye has not entered into the gall blader, the soft stones will remain invisible. In cases of repeated colics with a non-visualization of the gall bladder on repeated examination in spite of absence of jaundice, operation is urgently indicated.

Reconstruction of Non-Union of Fracture Neck Femur

Whitman (*J. Bones & Jt. Surg.*, **29**:310, 1947) writes that whether any operative treatment should be undertaken depends upon considerations applicable to the individual. Aged patients in poor condition are not proper subjects. Usually it is done for the ordinary group whose locomotor ability is severely curtailed and who suffer a great deal of pain.

Indications for Whitman Reconstruction are:—(1) Non-union with aseptic necrosis. (2) Non-union with absorption of the neck. (3) Non-union after pinning with some degree of infection. (4) Union with late necrosis of the head and secondary obsteoarthritis.

In all these there is specific indication for the removal of the head as it offers the only obvious and reasonable solution of the pathological problem.

Whitman advocates plastering for 3 months. The trochanter unites readily. The plaster is removed after 3 weeks and active and passive motion is instituted with heat and massage. He is allowed to become ambulatory when he has demonstrated a reasonable degree of muscular control of the limb which usually occurs in 6 weeks.

20 cases were done during 1934-38. The principal object for performing the operation is the relief of pain. In 4 patients pain was not relieved. No patient obtained more than 90° motion and the few who obtained more were unstable. One who exhibited pronounced degree of restriction of motion (20 to 30°) had the greatest stability and greatest relief of pain.

Penicillin in Peritonsillar Abscess and Peritonsillar Phlegmon

Rosenberg (*Arch. Otolaryng.*, **44**:662, 1946) report on the study reports 25 cases of peritonsillar abscess and phlegmon treated with penicillin. The routine dosage was 200,000 units given intramuscularly in ten doses at three-hour intervals. The author found penicillin to be superior to sulphonamides in treatment. If abscess had already formed, he found it necessary to incise and drain it. Penicillin seemed to have a definite curative action in phlegmon and tended to prevent abscess formation.

Constitutional Factors in Otological Conditions

McMahon (*Am. Oto. Rhino. & Laryngol.*, **56**:298, 1947) writes that hyperthyroidism and allergy may cause deafness, tinnitus, vertigo and serous otitis media.

Deficiency in vitamins A and B may contribute to general lowered resistance and predisposition to infections of the middle ear.

Disturbances of function in the pituitary and parathyroid glands and deficiency in vitamin D may give rise to faulty metabolism and distribution of calcium and phosphorus leading to abnormal bone changes in the otic capsule.

It is suggested that the changes which occur in the otic capsule in otosclerosis may be the result of local metabolic disturbances in osteogenic physiology and the process of bone repair.

Application of Our Knowledge of the Rh Factor

Cole (*Am. J. Obstet. & Gyn.*, **53**:181, 1947) reports that at the New York Hospital, since an adequate supply of Rh testing serum has become available, all women admitted to the Woman's Clinic are Rh typed at their first clinic visit. As far as possible the husbands of Rh-negative women are also Rh typed. Beginning with the thirty-seventh week of pregnancy in Rh-negative women, weekly determinations of Rh-antibodies, are made. If Rh-antibodies are demonstrated in any case, the patient is re-evaluated when admitted to the hospital for delivery. Type O, Rh-negative blood is provided for transfusion of the mother or the infant as indicated. When the infant is delivered, the cord blood is examined for Rh-typed, hæmoglobin and presence of abnormal erythrocytes, such studies being made at six-hour intervals. These infants are not allowed to breast feed. The placenta is examined for evidence of hæmolytic disease. For a time similar studies of

cord blood and placenta were made after the delivery of Rh-negative mothers who did not develop Rh-antibodies during pregnancy; but as the infant's blood and the placenta have been found normal in these cases, such studies have been abandoned. Only Rh-negative blood is given to Rh-negative patients throughout the clinic.

In approximately 5,000 Rh determinations, 86 per cent of the women tested were Rh-positive and 14 per cent Rh-negative. The incidence of proved hemolytic disease during the past three years has been 1:230 full-term and premature deliveries. In the period that determinations of Rh-antibodies have been made, 55 patients with antibodies present in the blood have been delivered at the hospital. All but 2 of the 36 infants with hemolytic disease were in this group. The importance of determining the Rh-type of all antenatal patients has been well demonstrated at the Woman's Clinic in the prevention of transfusion reactions in obstetric emergencies when large amounts of blood must be given promptly. The importance of testing Rh-negative women for Rh-antibodies is also indicated, as such tests make it possible to predict the outcome for the infant. Even with these precautions, the fœtal mortality is high. No treatment is known for the hydropic form of hemolytic disease. In the anemic form of hemolytic disease, prompt diagnosis and transfusion of adequate amounts of Rh-negative blood should reduce the mortality materially. In the jaundice type of hemolytic disease exsanguinating transfusions appear to be the best method of treatment now available.

Pregnancy in the Patient with Hypertensive Disease

Chesley and Annitto (*Am. J. Obstet. & Gynec.*, **53**:372, 1947) report a study of 301 pregnancies in 248 women in which hypertension (systolic pressure above 140 mm. Hg.) had been known to exist before pregnancy or was found to be present before the twenty-fourth week of pregnancy, no previous normal readings having been recorded. A decrease of more than 20 mm. Hg. was noted in the second trimester of pregnancy in 39·6 per cent of the pregnancies; in some of these cases the blood pressure rose again in the third trimester. In 9 pregnancies in 8 patients eclampsia developed; and 81 were considered to be pre-eclamptic on the basis of rise in blood pressure in the third trimester and proteinuria or a marked proteinura alone. Of the patients who had eclampsia or pre-eclampsia superimposed on hypertension, 19 have had subsequent pregnancies; 10, or 53 per cent, of these subsequent pregnancies were toxic and 3 terminated in abortion; 2 patients were delivered at home. There were 6 immediate maternal deaths and 7 late maternal deaths in this series; 4 of the latter were due to malignant nephrosclerosis. The maternal mortality in this series of hypertensive pregnancies was 20 times that of the whole hospital experience. Twenty of the patients were sterilized either at the time of delivery by cesarean section or postpartum. Therapeutic abortion was done in 3 patients; one of these patients with malignant hypertension died six weeks later; another died of cerebral hemorrhage six years later; the third patient is living fourteen years later and has borne a living child in that period. Of the 301 pregnancies, 186 children, 61·8 per cent, were discharged alive. There were 8 early abortions, 38 late abortions and previable prematures, 53 stillbirths and 16 neonatal deaths. The fœtal loss increased with the higher initial blood pressure in the second trimester, decreased renal function, proteinuria and superimposed toxemia. The fœtal loss was especially high in the pregnancies in which there was a second trimester rise in blood pressure and in those with superimposed eclampsia.

Chronic Hypertension and Pregnancy

Browne (*Brit. M.J.*, **2**:283, 1947) writes that chronic hypertension constitutes about 25 per cent of all cases of toxaemia of pregnancy.

It must be differentiated from chronic nephritis and pre-eclamptic toxaemia.

In the chronic hypertensive the blood pressure tends to fall to a normal level in the second three months of pregnancy. It may or may not rise again in the later weeks.

If the systolic blood pressure rises above 160 mm. Hg. albumin is likely to appear in the urine and the foetus to die in utero. The reasons for these occurrences and the relation between them are discussed.

Except in the more severe cases, with signs of renal involvement, retinal arteriosclerosis, exudates, or papilloedema, there is no need to terminate pregnancy in the early weeks.

If the pregnancy is allowed to continue treatment should aim at keeping the blood pressure below the danger level of 160 mm. Hg. For this the best agent is rest if necessary in bed.

With careful supervision most patients with chronic hypertension go to term and deliver themselves spantaneously of living infants.

In those patients in whom the pregnancy is allowed to continue the outlook for a successful pregnancy depends chiefly on the height of the blood pressure at the beginning of pregnancy. If it is over 150|100 only about 33 per cent give birth to viable infants.

The incidence of pre-eclamptic toxaemia is about seven times, and of eclampsia ten times, that in women who are normal at the start of pregnancy.

There is no reason to believe that the hypertension is permanently aggravated by the pregnancy.

Treatment of Amenorrhea in Young Women

Randall (*Am. J. Obstet. & Gynec.*, **53**:453, 1947) describes the method of treatment employed in 87 young women (nineteen to twenty-five years of age) with amenorrhea of one to five years' duration. Patients who were markedly underweight, including those with typical symptoms of anorexia nervosa, were given a balanced diet of high caloric value and rich caloric value and rich in proteins and vitamins. For patients with anorexia nervosa the caloric value of the diet was gradually increased, as on beginning treatment these patients complained of distress and a sensation of fullness when given a diet with 300 calories added to their previous daliy caloric intake. By increasing by 300 calories every five to six days, this difficulty could be overcome and the diet increased to 3,400 to 3,600 calories. Not only did these patients gain weight, but the basal metabolic rate, which was below normal, was usually raised to normal by this regimen. When there had been a reduction in the size of the uterus, and especially if biopsy of the endometrium showed atrophy, the cyclic administration of an estrogen was employed for two or three

weeks in every four. In some cases cyclic administration of estrogen and progesterone was employed to stimulate the normal cyclic rise and fall of estrogens more closely. In cases other than anorexia nervosa in which the basal metabolism was below normal, thyroid extract was given in such dosage as to elevate the rate "rather abruptly", followed by a smaller maintenance dose. In some cases in which the basal metabolic rate was between —10 and zero, it was found to be of advantage to raise the metabolic rate to +5, as a method of stimulating bodily function. Low dosage roentgen-ray irradiation to the pituitary body or ovaries or both has also been employed. It was found that when amenorrhea had been present for more than a year, better results were obtained by this method in cases where amenorrhea was due primarily to pituitary rather than to ovarian failure. Extrinsic gonadotropins were employed in only 3 of the 87 patients in this series. The follow-up in this series has ranged from one to six years, with an average of two years and three months. In 17 cases the amenorrhea was due primarily to ovarian failure; 10 of these patients (58·8 per cent) menstruated after treatment. In 36 cases amenorrhea was due primarily to pituitary failure; 26 (72·2 per cent of this group) responded to treatment. Eight of 15 cases of anorexia nervosa (53·3 per cent) responded to treatment. There were 19 cases of primary amenorrhea; menstruation was established in only 3 of this group. In a series with amenorrhea of shorter duration, under one year, better results would probably be obtained by a similar plan of treatment.

Poliomyelitis in Pregnancy

Baker and Baker (*Minnesota Med.*, **30**: 729, 1947) write that during the period of July 29 to September 21, 1946, 695 cases of acute anterior poliomyelitis were admitted to the Minneapolis General Hospital. Of this number, 115 were females in child-bearing age of fifteen to forty-five years, and of these, thirty were pregnant. There were seven in the first trimester of pregnancy, seventeen in the second, and seven in the third. Fifteen live babies had been delivered by March 15, 1947. Eight of these deliveries were spontaneous, and the infants were full-term. One was a cesarean section; two were simple low forceps extractions; one was carried out by conversion of a brow to an occiput posterior position and a low forceps extraction; one was a breech extraction of a premature infant with osteogenesis imperfecta; one was a normal spontaneous delivery of a premature infant; and one was a postmortem hysterotomy which produced an infant of seven lunar months' gestation which lived only five minutes. Seven spontaneous abortion and six deaths occurred among the thirty pregnant patients.

Acute anterior poliomyelitis occurs in all three trimesters of pregnancy. It occurs in the pregnant woman more frequently than can be attributed to mere chance.

In general, pregnancy has little influence on the course of poliomyelitis or the extent of paralysis.

There is a relatively high percentage of abortion (30·4 per cent) among pregnant patients with poliomyelitis.

This study produced no evidence to show that the fetus can or cannot contract poliomyelitis *in utero*.

Menstrual Toxin: Experimental Study

Smith (*Am. J. Obstat. & Gynec.*, **54**: 201, 1947) writes that although the studies on menstrual toxin that he has presented cover a period of eight years, it is apparent that much work remains to be done. Certain properties of menstrual discharge have been established, the most important being a toxic factor and a fibrinolytic enzyme associated with the euglobulin fraction, and a substance in the pseudoglobulin fraction which neutralizes the toxin. These same properties have been demonstrated in the circulating blood of women during menstruation, late pregnancy toxemia and prolonged labor but not in that of nonmenstruating or normally pregnant women. They have also been demonstrated in exudative material from inflammatory reactions, indicating that, although in the menstruating endometrium and in toxemia of pregnancy they result from tissue catabolism due to withdrawal of hormonal support, other sorts of cellular injury may cause a similar phenomenon. At present, however, they can only be called "properties", since neither the mechanism of their formation, other than that it appears to be a part of tissue catabolism, nor their chemical nature, other than that they are associated with protein materials, has been established. Thus far they have only been scratching the surface in an attempt to gain some further understanding of menstruation and of late pregnancy toxemia and in the hope of gaining knowledge that would be of clinical value. They would be delighted if the pathologists, the immunologists and the protein chemists would consider our pioneering efforts worthy of their more refined methods of investigation.

Indications for Removal of a Normal Uterus

Bieren and Hundley (*Am. J. Obstet. & Gynec.*, **54**: 321, 1947) write that pelvic malignancy, tuberculous salpingitis, prolapse, and intractable bleeding in older women may be definite indications for removal of a normal uterus.

Inflammatory disease, endometriosis, benign ovarian tumors, dysfunctional bleeding in younger women, and endocervicitis are at best questionable indications for removal of a normal uterus.

Ectopic pregnancy, cystocele and rectocele per se, psychoneurosis, and dysmenorrhea are not indications for removal of a normal uterus.

In this series of 300 operations there was no indication for hysterectomy in 43 cases, or 14 per cent, and questionable indication in 197 cases, or 15·6 per cent.

The authors conclude that even in a well-supervised teaching hospital histerectomies are sometimes performed with little or no justification for the operation.

Treatment of Tuberculous Salpingitis with Special Reference to X-ray Therapy

Philipps (*Proc. Roy. Soc. Med.*, **40**: 376-78, 1947) writes that the diagnosis of this condition is not always easy. The age incidence is usually acknowledged to be between 15-35 years although it may occur at any age. The patient is oftener than not a virgin. Night sweats, loss of weight and evening rise of treatment may or may not be present. Menorrhagia is commoner than amenorrhoea. The ideal means of making diagnosis is from the examination of curettings or endometrial biopsy. This enables one to avoid a laparotomy—another means of making a diagnosis—which may light up the condition and prove fatal.

Of the 20 cases of tuberculous salphingitis treated in the Middlesex Hospital 13 were treated with deep X-ray and seven by surgery alone. 5 of those treated by operation only,

were comparatively healthy women. One was treated with streptomycin and sanatorium line of treatment with good result, and the seventh died before X-ray treatment could be commenced. The dangers of surgery are flaring up of the condition with fatal results, development of tuberculous sinuses and faecal fistulae. These sinuses respond very well to deep X-ray therapy. None of the cases treated with deep X-rays has relapsed and none died. The X-ray treatment involves giving a total dose of about 600 r. in a course of twelve to 18 treatments spread over 6 to 9 weeks. The course may be repeated after an interval of a few months without producing menopause. Only one case acquired an X-ray menopause. No case continued to have menorrhagia.

From all these cases the conclusion to be drawn is that there is as yet no fixed rule for the treatment of tuberculous salpingitis. Rest, good food and heliotherapy all play their part. Though radical surgery may prove to be of great value it is fraught with grave dangers. It does appear that X-ray therapy has a definite place in the treatment of this condition.

Protein Metabolism in Infants

In recent years there has been an increasing use of special digests of protein for the feeding of premature and sick infants, and with this has come a re-examination of various aspects of protein metabolism. Prof. Emmett Holt and his co-workers in Baltimore and later in New York, first in rats and in adults and later in infants, have started some important and fundamental studies in this subject, some details of which are now available. The testing of the nutritional quality of some available milk preparations in the normal infant has been carried out by careful metabolic studies in three normal full-time male babies. Four types of diet were used: an evaporated milk mixture, a mixture based on an enzymatic digest of casein, a similar digest of lactalbumin, and an acid digest of casein supplemented with tryptophan and cystine. All the four diets were given in five daily feeds on a basis of about 100 calories per kilogram, supplemented with ascorbic acid and "oleum percomorphum". Brewer's yeast was added to supply the vitamins B complex. Each batch of the diet mixture was assayed for its nitrogen content and the daily nitrogen intake of the subjects calculated for the seven-day period of the test. Each infant received the four diets for consecutive periods, and from the urine, fæces, and blood elaborate estimations were made of the nitrogen output, haemoglobin, total plasma proteins, albumin, globulin, non-protein nitrogen in the blood and in the urine, amino-acids, urea, and other substances. In summary the nitrogen retention and weight gain of the three infants while on the acid digest of casein mixture were respectively about 30 and 50% lower than those obtained when the same subjects were given synthetic diets based on enzymatic digests of casein or lactalbumin. Fluid, calorie and nitrogen intake were essentially the same with all the diets. The biological value of these two enzymatic digests was about the same as that of the evaporated milk mixture used as the fourth test material. It is suggested that the acid digest of casein lacks certain peptide-like substances ("strepogenin") occurring in the enzyme digests and that the strepogenin fraction is required for the maximal utilization of amino-acids in the diet.

These broad studies, so to speak, are followed by a detailed investigation of tryptophan requirements in the infant, conducted on three healthy male infants in much the same manner as the previous study. A tryptophan deficient diet was used—an acid hydrolysate of casein—and as control a similar diet with a tryptophan supplement added step-wise to supply 0·5, 1·0, and 1·5% of the protein content. Cystine was added to all four diets and brewer's yeast again as a source of B-complex vitamins, together with ascorbic acid and oleum percomorphum. The measurements of intake and output were conducted as already described. In all three subjects on the tryptophan-deficient diet there was a marked decrease in the daily weight gain and a drop in nitrogen retention-equivalent to a negative nitrogen balance in the fully grown adult. Within ten days a tryptophan-poor diet caused an appreciable fall in the blood protein level chiefly reflected in the albumin content. In one subject the plasma proteins returned to nearly normal levels on the diet with the 0·5% added tryptophan, whereas it required the 1·0% addition to restore nitrogen retention, weight, and urinary tryptophan to normal, which suggests that blood proteins have a claim on the available nutrients prior to those of other tissues. Urinary studies suggested that the tryptophan level of the urine may serve as a useful criterion for the estimation of the minimum dietary requirements of this amino-acid. Previous studies on adults had suggested that the tryptophan requirement of an adult was about 6 mg. per kg. of body weight. The present work puts the level for infants between 5 and 12 months of age at about 30 mg. per kg. of body weight for normal growth, and this explains in part the high protein needs of the growing infant. Another difference from conditions in adults is that even after 6 weeks' tryptophan-deficient diet there was no change in the level of plasma proteins. An interesting point was a severe anorexia on the tryptophan-deficient diets in the three infants it was not caused by taste.—*Brit. M. J.*, **2**:664, 1947.

Quarantine, Incubation, and Isolation at School

Smith (*Lancet*, **2**:1, 1947) refers to the practice of isolation and quarantine since the time of Moses, but feels that it has been revered for generations contrary to the facts and natural history of common infectious diseases. Authorities at school have been guided by prejudices and with the idea of safety. He thinks that the period of quarantine and isolation imposed on contacts has been unnecessary, in some cases and too prolonged in others. He shows, by figures obtained from Rigby School of which he is the medical officer that quarantine and isolation period can be very much reduced. He advocates that the period of incubation of the diseases should be revised in the light of new knowledge and new methods of isolation and methods of study of viruses. From his long experience as a school medical officer he describes the length of infectiousness of some of the virus diseases. He thinks that infectious period of mumps is 2 or 3 days after the swelling has subsided. The boy who has suffered from the disease of mumps should not be isolated for more than a day or two after the swelling has gone down. In measles, he finds that the boy should be isolated for 4 or 5 days after the subject is clinically free from the infection. In chicken-pox, the skin should be properly nursed and it should be improved in health as early as possible. By this method he finds that the isolation period is reduced by half.

The length of infectivity of poliomyelitis is short and rarely contacts in the hospital where the cases of the disease are admitted contract the disease Whooping cough is infectious in the early stage but loses its infectiousness by the time whoop appears even though the child may be ill. In scarlet fever the author considers a month is ample for isolation. He advocates that medical people should persuade lay authorities of schools that quarantine of exposed persons is wasteful and observation should replace it. He recommends more emphasis on the health of the boys because he finds that healthy boys resist the disease better. He suggests to the medical authorities of the school to provide for ideal convalescence.

Breast Feeding

The Institute of Social Medicine in Oxford is carrying out a survey on the health, sickness and development of children from birth to five years of age. Breast feeding, with special reference to social factors, is discussed in a preliminary report which appeared in the July issue of Public Health. The figures presented tell the familiar story that 50 per cent or more of mothers have to wean their babies, not because they plan to but because for one reason or another their milk fails; the figures also suggest that the phenomenon is more or less equally widespread among the different social grades of society.

Though it is true, as the report says, that "the medical profession shows some divergence of opinion on the merits of breast feeding", there is very little doubt about the opinion of the great majority of doctors whose work is primarily concerned with the welfare of infants. Their opinion is based on the figures for morbidity and mortality during the first year of life and the knowledge that gastro-enteritis as a fatal condition is very nearly unknown in infants on the breast.

Too little is known about the various factors at work in preventing successful lactation. The physiology of lactation is known only as a simplified explanation of the happenings when milk is plentiful. Numerous investigations have so far failed to clarify the various factors that lead to a failure of milk, though it seems clear that this most frequently takes place during the six to eight weeks after the mother gets up following childbirth. The usual reason the mother herself gives is that she gave up because the milk "suddenly went", and, as the report says, she will add, if pressed, that it went because she had too much housework to do. But there is very little evidence that she is right, and it is doubtful whether this kind of Gallup poll can advance our knowledge very far. A more fruitful line of study lies in careful objective investigation throughout the full period of breast development and lactation; that is, beginning at least during the later months of pregnancy, on through the puerperium and until weaning has been accomplished. At present trained investigators seldom have access to the mother during more than one of these essential phases.

One small investigation on these lines has, however, brought to light some evidence which needs further evaluation. Dr. Harold Weller in an address to the British Paediatric Association this year described results of his studies during the last ten to fifteen years in the East End of London. Briefly, he claims that one great factor leading to failure of lactation is the temporary phase of congestion and obstruction to the outflow of milk at the time when the milk is coming in during puerperium. If this is severe the breast receives a setback to the secretion of milk which though it may be overcome eventually leads to a gradual failure of milk supply in the following weeks. This congestion, Dr. Waller suggests, is due to clogging of the milk ducts both large and small by inspissated milk and debris that has collected during the final weeks of pregnancy. It can, he claims, be largely avoided partly by manual expression of milk during this time and partly by the immediate relief of congestion when it occurs—again by manual expression, and, if necessary, with the help of small doses of oestrogenic hormone.

Dr. Waller's figures for success in breast feeding in a group of mothers in which antenatal expression was performed, compared to a control group otherwise similarly treated (85 per cent breast feeding at 6 months compared with 55 per cent in the control group) are far better than have been achieved by any other routine measures. If the importance of breast feeding is granted this work needs to be repeated on a large scale, and the results corroborated or refuted, as an important step towards the elucidation of the decline in breast feeding.—Ed., *Mother & Child,* **18**: 116, 1947.

Insulin Regulation in One Hundred and Twenty-six Diabetic Children

Mosenthan (*J. Clin. Endocrinol.*, **7**: 205, 1947) writes that the insulin regulation of 126 diabetic children was studied at Camp Nyda during July and August, 1946.

Of the three types of insulin, R, P, and G, when given as the sole insulin, only P and G were satisfactory; in many instances R was a distinct failure. The large doses of P alone, applicable in some instances are noteworthy; on discharge from the camp 14 children were receiving more than 30 units of P only, and 6 were receiving more than 40 units.

P and R by separate injections had to be replaced by other forms of insulin in many cases. Besides the disadvantage of a double injection, this form of insulin therapy proved less satisfactory than the insulin mixtures made in one syringe.

Insulin mixtures of P and N prepared in one syringe proved effective. Where insulin changes were believed advisable, the routine switch was made to a mixture of 1 part P to 2 parts R advocated by Colwell as the most generally applicable insulin. However, we believe that G would have yielded equally good results. Although the idea that P should not exceed the amount of R in one syringe mixtures is prevalent, it was shown that on an empirical basis, P was often greater in amount than R for optimal results.